EUROSPINE

schweizerisches implantat-register
registre suisse des implants
siris

DICTIONARY OF TERMS

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1. Aim of the document

The document explains the terms from the SIRIS Spine data structure and provides standardised definitions.

2. Authors

The terms and definitions are developed by EUROSPINE, the body responsible for managing the registry, and approved by the SIRIS Spine Scientific Advisory Board.

3. Addressees

This document is intended for all SIRIS Spine registrants, regardless of their function and tasks.

4. Further development of the document

The document will be further developed as required. Further developments are generally based on demand. In the case of substantial and implication-rich adjustments to the document, the time of publication is chosen carefully in order to ensure the highest possible data quality.

Change requests and comments can be sent to siris-spine@eurospine.org at any time.

5. Data structure

Admission / Pathology

Question	Response options	Explanations and definitions
Admission date	[Date]	The date of admission to the clinic.
Main pathology	Degenerative disease	Pathological changes due to age-related wear and tear processes. In the case of **degenerative spondylolisthesis**, e.g. spondylolisthesis due to wear of the facets without anatomical changes to the pars interarticularis, please select **degenerative disease** as the main pathology and specify further as "degenerative spondylolisthesis" under the question "Primary type of degeneration".
	Non-degenerative deformity	Clinically relevant scoliosis or deviation of sagittal alignment on more than two segments.
	Fracture/Trauma	Fracture as a result of trauma.
	Pathological fracture	Fracture due to a pathological bone disease such as tumour, osteoporosis or similar.
	Spondylolisthesis (non-degenerative)	Vertebral slippage of the vertebrae including segmental rotational displacement (including isthmic spondylolisthesis (also Meyerding 0) in spondylolysis).
	Infection	Condition due to the invasion and multiplication of pathogenic microorganisms (according to Centers for Disease Control and Prevention (CDC) criteria).
	Tumour	Includes paravertebral soft tissue, bone and neurogenic tumours of the spine.
	Revision / Reoperation	Only the reoperations and revisions that are related to the index surgery that is subject to registration. This includes, for example, surgery performed because the index surgery did not achieve its technical objectives (e.g. incorrectly placed screw, insufficient decompression, lack of fusion, etc.) or clinical objectives (technical objectives are met but symptoms persist, e.g. successful fusion but persistent pain). Elective reoperations are also included, e.g. for metal removal. The index operation does not necessarily have to be included in the register. Reoperations and revisions of other index surgeries are not included.
	Other...	→ Specify another pathology if the above answer options do not cover it.

Specification of the main pathology

These questions serve to improve the definition of the main pathology and to form subgroups for later more differentiated identification.

Degenerative disease

The primary degeneration type refers to the main degenerative diagnosis that is the main indication for treatment. Only one answer is permitted. In case of doubt, the more severe degeneration type should be selected as the primary degeneration.

Secondary degeneration type refers to all secondary degenerative diagnoses that are associated with the primary diagnosis but are not the primary indication for treatment.

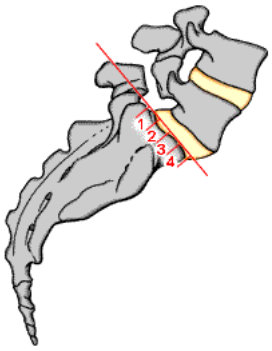
Similar patients with a similar combination of degenerative diagnoses may be treated with a different treatment focus. The registrant must ensure that the primary pathology is the main indication for the treatment carried out.

Question	Response options	Explanations and definitions
Type of degeneration	Disc hernia	Disc material within the boundaries of the spinal canal that is connected to the disc space (e.g. bulge, protrusion) or separated from it (sequestrum, extrusion). For further details, please tick "other" and specify.
	Central or lateral stenosis	Narrowing of the central spinal canal or the recess through bony and ligamentous structures with consecutive nerve compression. Possible causes include hyperthrophy of the yellow ligament (lig. flavum), bony dislocation due to enlargement of the facet joints (osteoarthrosis), osteophyte formation, degenerative spondylolisthesis, a reduction in the height of the intervertebral disc or disc protrusion. In the case of a combination of spinal stenosis and degenerative spondylolisthesis, the surgery must be registered as a degenerative spondylolisthesis.
	Foraminal stenosis	Narrowing of the foramen, intraforaminal stenosis with compression of the nerve root.
	Degenerative spondylolisthesis	Spondylolisthesis due to degenerative changes, e.g. spondylolisthesis due to facet wear without anatomical changes in the pars interarticularis. Please also specify the degree of spondylolisthesis.
	Segment degeneration	Degeneration of the intervertebral disc. Disc-related pathology, e.g. loss of height, endplate changes, intradiscal gas, etc. Loss of stiffness in a motion segment (not spondylolisthesis) caused by degenerative changes. Degenerative changes in the facet joints.
	Degenerative deformity	Deformity of the spine due to degenerative changes, e.g. scoliosis, kyphosis. Also referred to as 'de novo', i.e. a deformity diagnosed in adulthood that was not present at the end of skeletal growth.
	Myelopathy	Gradual loss of nerve function due to progressive narrowing of the spinal canal.
	Facet joint arthrosis	Spondylarthrosis, degenerative changes (arthrosis) of the facet joints.

Question	Response options	Explanations and definitions
	Synovial cyst	Fluid-filled sac that has developed as a result of spinal degeneration.
	SI joint	Degeneration of the sacroiliac joint.
	Other...	→ Specify another degenerative diagnosis if the answer options above do not cover it.

Spondylolisthesis

Question	Response options	Explanations and definitions
Type of spondylolisthesis	Type I (congenital, displastic)	Congenital anomalies of the upper sacrum or the L5 arch, which can lead to olisthesis.
	Type II (isthmic)	The interarticular part (between the joints) of the vertebral arch is only cartilaginous - not ossified - and therefore represents a weak point. A fracture (lysis) of this allows the vertebral body to slip. There are two subtypes: 1) Repeated flexion-extension movements can cause the lysis gap and thus slippage; 2) A healed fracture caused by external impact or stress with subsequent lengthening of the intervertebral space enables slippage.
	Type III (degenerative)	Long-lasting intersegmental instability. To register a degenerative spondylolisthesis, select "degenerative disease" as the main pathology and enter "degenerative spondylolisthesis" as the degeneration type.
	Type IV (traumatic)	Fracture in areas of the bony hook other than the pars.
	Type V (pathological)	A local or systemic bone disease.
	Type IV (iatrogenic)	Due to iatrogenic instability. If in the neighbouring segment, select "Revision / Reoperation" as the main pathology and tick "Connecting segment pathology".
	Other...	→ Specify a different type of spondylolisthesis (e.g. dysplastic).

Question	Response options	Explanations and definitions
Grade of spondylolisthesis [Meyerding HW (1932 Spondylilisthesis. Surg Gynecol Obstet 54: 371-377]		The extent of spondylolisthesis is described according to the Meyerding classification. A distinction is made between grades I-IV. If a vertebral body slips completely from the underlying vertebral body, the spondylolisthesis is classified as grade V, which is referred to as spondyloptosis. 
	Grade I	0 - 25% Sliding of the vertebral body over the vertebral body below.
	Grade II	25 - 50%
	Grade III	50 - 75%
	Grade IV	75 - 100%
	Grade V	>100% = spondyloptosis

Pathological / traumatic fracture

Question	Response options	Explanations and definitions
Type of fracture	C0 condylar fracture	C0 condylar fracture.
	C0/1 dissociation	C0/1 dissociation.
	C1 fracture	C1 fracture.
	C1/2 instability	Instability between C1 and C2.
	C2 dense fracture	→ Specify the type of dens fracture.
	C2 other fracture	A C2 fracture with the exception of dens fractures.
	C3-C7 fracture	Traumatic injuries or fractures of the lower cervical spine.
	Th1-L5/S1 fracture	Traumatic injuries or fractures of the thoracic and lumbar spine including the lumbosacral junction.
	Sacral fracture	Fracture of the sacrum.

Question	Response options	Explanations and definitions
	Other...	→ Specify another fracture if the above answer options do not cover it.
Fracture age	Fresh fracture (<28 days)	Fractures that are operated on less than 4 weeks after their occurrence or radiological diagnosis.
	Old fracture (≥28 days)	Fractures that are operated on from 4 weeks after their occurrence or after their radiological diagnosis.
Pathological fracture due to	Osteoporosis	Osteoporosis: progressive systemic skeletal disease with reduced bone mineral density (BMD). If applicable, also state the classification of osteoporotic vertebral fractures.
	Tumour	A fracture that is favoured or even caused by a tumour disease. If necessary, also specify the type and localisation of the tumour.
	Other...	→ Please state another reason for the pathological fracture.
Classification [Schnake KJ et al. Global Global Spine J. 2018 Sep;8(2 Suppl): 46S-49S]	OF1	No deformation (osteoporotic fracture 1). If you have several fractures, please select the highest OF grade.
	OF2	Deformation with minor/without posterior wall involvement <1/5 (osteoporotic fracture 2).
	OF3	Deformation with pronounced posterior wall involvement >1/5 (osteoporotic fracture 3).
	OF4	Loss of the frame structure (vertebral body collapse, pinch fracture) (osteoporotic fracture 4).
	OF5	Distraction and rotation injury.
Dens fracture [Anderson LD, D'Alonzo RT (1974) JBJS-A 56 (8): 1663-1674.]	I	Fracture of the upper dens.
	II	Fracture of the base of the dens.
	III	Fracture of the axial body with facets.

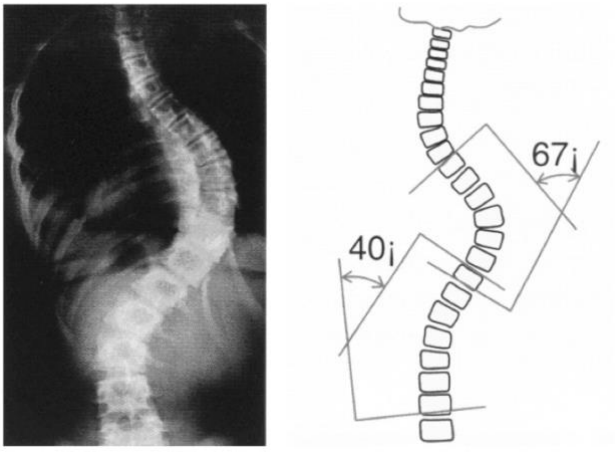
AO Classification	Response options	Explanations and definitions
C3-L5/S1 AO Fracture type	Compression fractures	
	A0	Minor, non-structural fractures: no bony injury or minor injury such as an isolated lamellar fracture or spinous process fracture.

AO Classification	Response options	Explanations and definitions
	A1	Wedge compression fracture: Compression fracture with a single end plate without involvement of the posterior wall of the vertebral body.
	A2	Cleft and pincer fracture ("pincer") with involvement of both end plates without involvement of the posterior wall of the vertebral body.
	A3	Incomplete burst fracture: burst fracture of a single end plate involving the posterior vertebral wall.
	A4	Complete burst fracture: burst fracture or sagittal split involving both end plates.
	Distraction injuries	
	B1	Flexion injury or distraction injury with dorsal, intraosseous rupture (Chance fracture); affects only one vertebral body
	B2	Flexion injury or distraction injury with dorsal, ligamentous tear with or without osseous involvement
	B3	Hyperextension injury with ventral tearing through the intervertebral disc
	Rotational injuries	
	C	Rotational injury in any axis - displacement or rotation of one vertebral body relative to another in any direction.
AO Neurological injury	N0	Neurologically intact.
	N1	Temporary neurological deficit that is no longer present at the time of the examination.
	N2	Radiculopathy.
	N3	Incomplete spinal cord injury, according to the classification of the American Spinal Injury Association (ASIA) grade D to B
	N4	Complete spinal cord lesion, according to ASIA grade A classification
	NX	Neurological status cannot be assessed, e.g. intubated patient
AO Modifiers	No modifiers	No modifiers applicable.
	Case-specific modifiers	
	M1	Injury to the posterior capsule-ligament complex without complete disruption.
	M2	Critical herniated disc.

AO Classification	Response options	Explanations and definitions
	M3	Stiffening / metabolic bone disease (i.e.: DISH, AS, OPLL, OLF).
	M4	Anomaly of the vertebral artery.
	Facet injuries	
	F1	Non-displaced facet fracture; fragment height <1cm, <40% of lateral mass.
	F2	Facet fracture with potential for instability; with fragment >1cm, >40% lateral mass or displaced.
	F3	Floating lateral mass.
	F4	Pathological subluxation or trapped/dislocated facet.
	Bilateral injuries	
	BL	Bilateral injuries.

Deformity

The question of the type of deformity should also be answered in the case of degenerative deformity.

Question	Response options	Explanations and definitions
Type of defect	Scoliosis	Coronal curvature of the spine of at least 10° with rotation of the vertebral bodies of unknown origin.  Reference: Cobb, JR Outline for the Study of Scoliosis. Instructional Course Lectures, The American Academy of Orthopaedic Surgeons. Vol. 5, pp. 261-275. Ann Arbor, JW Edwards, 1948
	Kyphosis	The Scoliosis Research Society suggests 10-40 degrees as the range for a normal kyphosis between the upper endplate T5 and the lower endplate T12.

Question	Response options	Explanations and definitions
	Frontal imbalance	Coronal malalignment with a displacement of the central sacral vertical line (CSVL) of at least 4 cm, measured on radiographs of the entire spine (Jackson RP et al, Spine 1994, 19, 1611-1618).
	Sagittal imbalance	Imbalance of the spine in the sagittal plane with an abnormal position of the vertical axis or associated pathological compensatory mechanisms (Le Huec et al, Eur Spine J 2019, Volume 28, Issue 9, pp 1889-1905).
	Other...	→ Enter another deformity if the above answer options do not cover it.
Predominant aetiology	Idiopathic	Spontaneous or from an unclear or unknown cause.
	Congenital	Malformation, failure of segment formation or mixed.
	Neuromuscular	Neuropathic or myopathic diseases (e.g. subclassification according to Lonstein et al: Group I: double thoracic and lumbar curvatures; Group II: large lumbar or thoraco-lumbar curvatures).
	Degenerative	De novo, secondary degenerative.
	Post-traumatic	Caused by trauma or fracture.
	M. Scheuermann	Scheuermann's disease (type I, "classic" Scheuermann's disease) is a thoracic or thoracolumbar hyperkyphosis caused by a wedging of the vertebrae in adolescence. Atypical Scheuermann's disease (type II, "lumbar" Scheuermann's disease) affects the lumbar spine and/or the thoracolumbar transition. It is a growth disorder of the vertebral bodies without significant wedging, which leads to a loss of lumbar lordosis or a slight kyphosis.
	Other...	→ Specify a different aetiology if the above answer options do not cover it.

Infection

Question	Response options	Explanations and definitions
Type of infection	Pyogen	Due to bacteria (non-specific).
	Tuberculosis	Tuberculosis
	Other...	→ Specify a different type of infection.
	Unknown	Select this answer if the type of infection remains unknown until discharge.
	Spondylitis	Infection of the vertebral bodies.

Question	Response options	Explanations and definitions
Affected structures	Discitis	Infection of the bend disc. For spondylodiscitis, select spondylitis and discitis.
	Epidural space	Extradural or peridural space. The space within the spinal canal (bony structures) outside the dura.
	Paravertebral infection	Infection of the paravertebral soft tissues (muscles, etc.).
	Other...	→ Enter another affected structure if the above answer options do not cover it.

Tumour

Question	Response options	Explanations and definitions
Localisation	Extraosseous soft tissue	The tumour is located in the soft tissue, without involving the bones.
	Intraosseous	The lesion is limited to the bony spine, with no involvement of other structures.
	Extraosseous extradural	Tumour tissue located in the spinal canal, extradural without bony involvement.
	Extraosseous intradural	Located deep in the theca, without bony involvement.
	Other...	→ Enter a different localisation if the above answer options do not cover it.
Type of tumour	Primarily malignant	Based on histological examination.
	Primarily benign	Based on histological examination.
	Secondary malignant	Metastasis.
	Tumour-like lesion	Tumour-like lesions are lesions that look similar to a tumour on ultrasound (US), computed tomography (CT) or magnetic resonance imaging (MRI) scans. As a rule, tumour-like lesions are described as follows: Findings that are compatible with a tumour-like lesion but where a neoplasm cannot be excluded.
	Other...	→ Enter a different tumour type if the above answer options do not cover it.

Reoperation

Question	Response options	Explanations and definitions
Reasons for reoperation	Another originally planned surgery	A surgery that was already planned before the primary operation. This includes, for example, the second surgery of a two-stage procedure.
	Neurocompression	Compression of neural structures with or without neurological deficits.
	Non-union	Failure of bony consolidation at least 6 months after surgery.
	Instability	Excessive movement in a spinal segment after surgery.
	Postoperative superficial infection	Superficial wound infection after surgery.
	Postoperative deep infection	Deep wound infection after surgery (according to CDC criteria).
	Wound healing problem	Delayed or atypical wound healing due to systemic and / or local factors. If an infection is present at the same time, an infection should be recorded.
	Implant malposition	Incorrect position of the implant.
	Implant migration or loosening	Screw loosening, cage sintering or implant migration.
	Implant breakage	Breakage of a screw, rod, cage or other implant.
	Implant assembly failure	Breakage of an expandable cage, failure of the cross-connectors, assembly error.
	Adjacent segment pathology	Degenerative changes in the neighbouring segment of the index surgery.
	Hardware removal	Removal of certain parts or the entire implant.
	Spinal imbalance	Spinal imbalance with an abnormal position of the vertical axis or associated pathological compensatory mechanisms.
	Liquor leakage	Cerebrospinal fluid leakage in case of dura injury.
	Failure to achieve therapeutic goals	Therapeutic goals were not achieved with the index surgery.
	Other...	→ to specify

Additional pathologies

Question	Response options	Explanations and definitions
Additional pathologies	Degenerative disease	Pathological changes due to age-related wear processes as an additional pathology.

Question	Response options	Explanations and definitions
	Non-degenerative deformity	Clinically relevant scoliosis or deviation of sagittal alignment on more than two segments as a further pathology.
	Fracture/Trauma	Fracture of the spine as a result of trauma as another pathology.
	Pathological fracture	Fracture of the spine due to a pathological bone disease such as tumour, osteoporosis or similar as a further pathology.
	Spondylolisthesis (non-degenerative)	Vertebral slippage of the vertebrae including segmental rotational displacement of non-degenerative origin and as another pathology.
	Inflammation	Inflammation of the spine as another pathology.
	Infection	Condition due to the invasion and proliferation of pathogenic microorganisms in the spine as another pathology.
	Tumour	An oncological disease of the spine as a further pathology.
	Revision / Reoperation	A previous surgery that is related to the current surgery. → Also state the reason for the revision/reoperation.
	Other...	→ Specify another pathology if the above answer options do not cover it.

Risk factors

Question	Response options	Explanations and definitions
Extent of surgery (segments / vertebral body)	1	Enter the number of operated segments or vertebral bodies
	2	
	3	
	4	
	5	
	6	
	7	
	8	
	9	

Question	Response options	Explanations and definitions
	10	
	>10	
Number of previous spine surgeries at the same or adjacent segment(s)	0	Enter the number of previous spinal interventions **at the same or adjacent segment(s)**.
	1	
	2	
	3	
	4	
	>4	
- of which at the same segments(s)	0	Enter the number of previous spinal interventions **at the same sebment(s)**.
	1	
	2	
	3	
	4	
	>4	
- of which on the adjacent segments(s)	0	Enter the number of previous spinal interventions **at adjacent segment(s)**.
	1	
	2	
	3	
	4	
	>4	
Duration of symptoms of the main pathology	<3 months	Indicate the known or, if not known, the most likely duration of the symptoms. In the case of a combination of several symptoms, indicate the duration of the symptoms that form the main basis for the decision on surgery.
	3-12 months	
	>12 months	
ASIA Classification	A	Complete: No sensory or motor function is preserved in the sacral segments S4-S5.
	B	Incomplete: Sensory but no motor function preserved below the neurological level; extends into the sacral segments S4-S5.
	C	Incomplete: Motor function is preserved below the neurological level and the majority of the

Question	Response options	Explanations and definitions
		characteristic muscles below the neurological level have a muscle strength grade of less than 3.
	D	Incomplete: Motor function is preserved below the level of damage and the majority of the characteristic muscles below the neurological level have a degree of muscle strength greater than or equal to 3.
	E	Normal: Sensory and motor function is normal.
Height (cm)	[a number between 50-280]	Height in centimetres.
Weight (kg)	[a number between 4-399]	Weight in kilograms.
BMI	[will be calculated automatically]	Weight classification according to WHO: Underweight: <18.5 Normal weight: >18.5 - <25 Overweight: 25 - <30 Obesity: ≥30
Active smoker	Yes	A person who currently smokes regularly OR a current occasional smoker (unknown number of days in the past month). Smoking includes the consumption of nicotine-containing and similar products.
	No	A person who does not currently smoke (either has never smoked or used to smoke).
	Unknown	Smoking status unknown.
Morbidity state (ASA)	ASA 1 (healthy)	Normal, otherwise healthy patient.
	ASA 2 (minor impairment)	Patient with mild general illness, e.g. mild diabetes, hypertension or anaemia.
	ASA 3 (severe impairment)	Patient with severe general illness, e.g. angina pectoris or healed myocardial infarction.
	ASA 4 (life-threatening)	Patient with severe general illness that poses a permanent threat to life, e.g. advanced lung, liver, kidney or endocrine insufficiency.
	ASA 5 (moribund)	Moribund (terminally ill) patient who is unlikely to survive without life-saving surgery, e.g. brain trauma with increasing intracranial pressure, burst abdominal aneurysm with deep shock, massive pulmonary embolism.
Therapeutic goal	Axial pain relief	Aim of the surgery: to relieve back/neck pain.
	Peripheral pain relief	Aim of the surgery: to relieve arm/leg pain.
	Functional improvement	Aim of the surgery: to improve the function of the spine as a whole or of individual spinal segments. E.g. ability to walk longer distances, greater mobility, improved ability to work (at home and at work), improved sporting abilities.

Question	Response options	Explanations and definitions
	Motor improvement	Aim of the surgery: Improvement of neurological-motor function, e.g. muscle function of the legs/arms.
	Sensory improvement	Aim of the surgery: Improvement of neurological sensory function in comparison, e.g. restoration of sensation.
	Improvement of bladder/sexual function	The aim of the surgery: to improve bladder and sexual function.
	Stabilisation of the spine	Aim of the surgery: stabilisation of the spine.
	Stopping the progression of the deformity	Aim of the surgery: to prevent the progression of the spinal deformity.
	Prophylactic decompression	Aim of the surgery: prophylactic/preventive decompression to avoid the development of neurocompression.
	Cosmetic improvement	The aim of the surgery: to improve the patient's physical appearance.
	Diagnostic measures	Aim of the surgery: A diagnostic procedure (e.g. a biopsy).
	Other...	→ Specify another destinationif the above answer options do not cover it.
Anaesthesia	Local	Local anaesthesia.
	Spinal	Spinal anaesthesia.
	General	General anaesthesia.

Surgery

Question	Response options	Explanations and definitions
Surgery date	[DD/MM/YYYY]	Date on which the patient underwent surgery in dd/mm/yyyy format.
Name of the surgeon	[Pull-down menu]	Name of the performing surgeon (from the pull-down menu). All registered surgeons in the respective department appear there. The assignment of the surgery to the surgeon allows a statistical overview of all surgeries that he or she has performed.
Qualification of the surgeon	Board certified and/or specialised	The primary surgeon is a specialist and performs the surgery at his/her own discretion.
	In training and/or instructed	The first surgeon is in training or has been instructed for the surgery.

Question	Response options	Explanations and definitions
Component	Yes - minimal registration (by manufacturer and brand)	Activates the "Component" subform for registering the implant manufacturer and the brand name of the implant.
	Yes - detailed registration (by catalog number)	Activates the 'Implants' subform to register the implants using the catalogue number (also corresponds to the article number or product number). The batch number (corresponds to the LOT number or LOS number) of the implant can also be optionally registered.
	No - no new implants	No new implants are inserted.
Anterior / lateral access	No anterior or lateral access	No anterior or lateral access.
	Transoral	Transoral access.
	Anterolateral	Anterolateral access.
	Lateral	Lateral access
	Cervicothoracic anterolateral	Cervicothoracic anterolateral approach.
	Thoracotomy	Thoracotomy for T4-T11.
	Retroperitoneal	Anterior approach without incision of the peritoneum.
	Thoracoscopy	Endoscopic procedure.
	Other...	→ Specify a different anterior access.
Posterior approach	No posterior approach	No posterior approach.
	Midline	Posterior approach through the midline.
	Paramedian	Paramedian incision.
	Percutaneous	Percutaneous access.
	Other...	→ Specify a different posterior access.
Technology	Conventional	Conventional open surgery without one of the following aids.
	MISS/LISS	MISS: Minimally invasive spinal surgery. LISS: Less invasive spinal surgery.
	Intraop. 3D imaging	Intraoperative imaging of the spine with devices that can generate axial as well as coronal and sagittal images similar to a CT reconstruction.
	Endoscope	An endoscope was used.

Question	Response options	Explanations and definitions
	Robot navigation	Robot navigation was used.
	Other navigation	A different navigation was used.
	Microscope	A microscope was used.
	Neuromonitoring	Intraoperative neurophysiological monitoring (IONM) or intraoperative neuromonitoring to monitor the functional integrity of certain neuronal structures.
	Other...	→ Specify a different technology.
Blood loss	Unknown	Not documented or not known.
	<100 ml	Corresponds to a blood loss volume of up to 100 millilitres or a blood loss volume rounded to 100 millilitres.
	100 - 500 ml	Corresponds to a blood loss of between 100 and 500 millilitres.
	500 - 1000 ml	Corresponds to a blood loss of between 500 millilitres and 1 litre.
	1000 - 2000 ml	Corresponds to a blood loss of between 1 and 2 litres.
	>2000 ml	Corresponds to a blood loss of more than 2 litres.
Duration of surgery	<1 hr.	Indicate the duration of the surgery from the incision to the suture.
	1 - 2 hrs.	
	2 - 3 hrs.	
	3 - 4 hrs.	
	4 - 5 hrs.	
	5 - 6 hrs.	
	6 - 8 hrs.	
	8 - 10 hrs.	
	>10 hrs.	
Blood transfusion	None	No blood transfusion during the surgery.
	< 2 units	Blood transfusion of less than two units during the surgery.
	>= 2 units	Blood transfusion of two or more units during the surgery.
	Cell Saver	Use of the Cell Saver during the surgery.

Implants

Question	Response options	Explanations and definitions
Manufacturer	[from the catalogue]	Name of the manufacturer.
Brand name	[from the catalogue]	The name of the implant brand is a mandatory entry in the minimal implant registration.
Description	[from the catalogue]	Is automatically loaded from the catalogue when the implant is selected from the catalogue. Can be used to search for implants. If an implant is not available in the catalogue, please click on "Request missing implant" and let us know the known details. We will then add the implant to the catalogue in cooperation with the manufacturer.
Catalogue number	[from the catalogue]	Is automatically loaded from the catalogue when the implant is selected or scanned from the catalogue. A manual catalogue number entry can be used for a unique search of the implant. If an implant is not available in the catalogue, please click on "Request missing implant" and let us know the known details. We will then add the implant to the catalogue in cooperation with the manufacturer.
Barcode (GTIN) number	[will be scanned]	First or primary barcode or QR code located on the implant sticker. The code can be scanned using a barcode scanner.
Additional barcode (if available)	[will be scanned]	(if present on the implant sticker) Second or secondary bar or QR code. If applicable, this code contains the serial number, batch number (also known as LOT or LOS number) and other information that can be read in with a scan.
LOT number	[manual specification]	The batch number is also known as the LOS number. It is used to identify a specific product quantity and should not be confused with the serial number, which is a unique number for an individual product. If available, this number can be found on the implant sticker and can be scanned using a barcode scanner or entered manually. You are not obliged to enter it. However, it can be very helpful for identifying the patients concerned when calling for implants.

Surgical measures and complications

Question	Response options	Explanations and definitions
Specify decompression	None	No decompression.
	Partial/total discectomy	Partial and total excision of an intervertebral disc.
	Laminotomy	Partial resection or opening of the spinal canal through the lamina.

Question	Response options	Explanations and definitions
	Hemi-laminectomy	Removal of one side of the spinal lamina.
	Laminectomy	Removal of the posterior arch of a vertebra.
	Facet joint resection partial	Partial resection of a facet joint on one or both sides..
	Facet joint resection full	Total resection of a facet joint on one or both sides.
	Sequestrectomy	Resection of a sequestrum.
	Foraminotomy	Bone resection / widening of the foramina.
	Uncoformaminotomy	Uncoforaminotomy of the cervical spine.
	Other...	→ Specify another relevant decompression.
Extent of surgery - decompression	C0/C1 or C0, C1/2 or C1, C2/3 or C2, C3/4 or C3, C4/5 or C4, C5/6 or C5, C7/Th1 or C7, Th1/2 or Th1, Th2/3 or Th2, Th3/4 or Th3, Th4/5 or Th4, Th5/6 or Th5, Th6/7 or Th6, Th7/8 or Th7, Th8/9 or Th8, Th9/10 or Th9, Th10/11 or Th10, Th11/12 or Th11, Th12/L1 or Th12, L1/2 or L1, L2/3 or L2, L3/4 or L3, L4/5 or L4, L5/S1 or L5, S1, Sacrum (S2-5), Coccyx, Ilium	Tick all treated segments or vertebral bodies.
Specify fusion	None	No fusion.
	Interbody fusion (A-IF)	An interbody fusion through an anterior approach. It includes lumbar and cervical interbody fusion.
	Interbody fusion (OLIF)	A lumbar interbody fusion through an anterolateral approach. [OLIF= oblique lumbar interbody fusion.]
	Interbody fusion (PLIF)	A lumbar interbody fusion through a posterior approach. [PLIF= posterior lumbar interbody fusion.]
	Interbody fusion (TLIF)	A transforaminal lumbar interbody fusion through a posterior approach. [TLIF= transforaminal lumbar interbody fusion.]
	Interbody fusion (XLIF)	An extreme lateral lumbar interbody fusion through an anterolateral approach.

Question	Response options	Explanations and definitions
		[XLIF = extreme lateral interbody fusion.]
	Other Interbody fusion	An interbody fusion other than AIF, OLIF, PLIF, TLIF and XLIF.
	Posterolateral fusion	Posterolateral application of the fusion material.
	Posterior fusion	Posterior application of the fusion material.
	ISG fusion	The positioning of the instrumentation through the sacrum, the sacroiliac joint and the ilium to supplement a lumbosacral fixation.
	Other...	→ Specify a different merger.
Extent of surgery - Fusion	C0/C1 or C0, C1/2 or C1, C2/3 or C2, C3/4 or C3, C4/5 or C4, C5/6 or C5, C7/Th1 or C7, Th1/2 or Th1, Th2/3 or Th2, Th3/4 or Th3, Th4/5 or Th4, Th5/6 or Th5, Th6/7 or Th6, Th7/8 or Th7, Th8/9 or Th8, Th9/10 or Th9, Th10/11 or Th10, Th11/12 or Th11, Th12/L1 or Th12, L1/2 or L1, L2/3 or L2, L3/4 or L3, L4/5 or L4, L5/S1 or L5, S1, Sacrum (S2-5), Coccyx, Ilium	Tick all treated segments or vertebral bodies.
Fusion material	None	No fusion material used.
	Autologous bone harvested	Autologous bone harvested from a different location, such as the iliac crest.
	Autologous bone locally procured	Autologous bone that accumulates locally during surgery, e.g. due to spinal decompression.
	Allogenic bone	Allogenic bone (e.g. demineralised bone matrix).
	Bone replacement	Artificially produced bone.
	BMP or similar	Artificially produced bone with bone morphogenetic proteins or other growth factors.
	others...	→ Specify a different fusion material.
Specify rigid stabilisation	vertebral body replacement with cage	Cage implantation as vertebral body replacement with total or partial vertebral body resection. Generally regarded as anterior rigid stabilisation.
	vertebral body replacement with auto/allograft	Vertebral body replacement using an autograft or allograft with total or partial vertebral body resection. Usually regarded as anterior rigid stabilisation.

Question	Response options	Explanations and definitions
	Plates	Stabilisation with plates. This is usually considered an anterior rigid stabilisation, whereby the plates can be attached to the anterior or lateral side of the vertebral body.
	Pedicle screws cemented	Stabilisation using pedicle screws augmented by synthetic materials that increase the biomechanical properties of the pedicle screws (e.g. polymethyl methacrylate or calcium phosphate). Generally regarded as posterior rigid stabilisation (posterior column).
	Pedicle screws uncemented	Stabilisation with non-augmented pedicle screws. Usually regarded as posterior rigid stabilisation.
	Facet screws	Screws through one or more facet joints.
	Ilium screws	Posterior screws implanted from the posterior superior iliac spine towards the anterior inferior iliac spine.
	Massa lateralis screws	Screws through one or more facet joints in the lower cervical spine.
	Transarticular screws C1-C2	Stabilisation with transarticular screws through the C1-C2 joint through a posterior approach.
	C2 Pars/isthmic screw	Use of C2 Pars/isthmic screw(s).
	Laminar hook	Stabilisation with supra- or infra-laminar hooks connected with rods. Spinal stabilisation from posterior.
	Pedicle hook	Stabilisation with pedicle hooks connected with rods. Spinal stabilisation from posterior.
	Sublaminar band/wire	Use of a sublaminar band/wire.
	Odontoid screw(s)	Anterior cervical spinal stabilisation with one or more odontoid screws.
	Laminar screw(s)	Translaminar facet screw fixation (TLFS). Spinal stabilisation from the posterior.
	Cement	Use of cement to reinforce the stabilisation.
	Other...	→ to be specified
Extent of surgery - Rigid stabilisation	Same scope as for the fusion, C0/C1 or C0, C1/2 or C1, C2/3 or C2, C3/4 or C3, C4/5 or C4, C5/6 or C5, C7/Th1 or C7, Th1/2 or Th1, Th2/3 or Th2, Th3/4 or Th3, Th4/5 or Th4, Th5/6 or Th5, Th6/7 or Th6, Th7/8 or Th7, Th8/9 or Th8,	Tick all treated segments or vertebral bodies. Tick the 'Same scope as for the fusion' box if the rigid stabilisation was performed on the same vertebral bodies and/or segments as the fusion.

Question	Response options	Explanations and definitions
	Th9/10 or Th9, Th10/11 or Th10, Th11/12 or Th11, Th12/L1 or Th12, L1/2 or L1, L2/3 or L2, L3/4 or L3, L4/5 or L4, L5/S1 or L5, S1, Sacrum (S2-5), Coccyx, Ilium	
Specify deformity correction	None	No deformity correction.
	Ponte / Smith-Petersen	A posterior column closing wedge osteotomy applied to a mobile segment involving the removal of a portion of the adjacent laminae, facets and lig. flavum to correct spinal deformities. Corresponds to grade II osteotomy according to Schwab.
	PSO	Pedicle subtraction osteotomy. An osteotomy with a closing wedge on the posterior column, performed with (at least) partial removal of the vertebral body, the two adjacent laminae, the pedicles of the affected vertebra, the facet joints and the lig. flavum to correct spinal deformities. Corresponds to grade III osteotomy according to Schwab or grade IV according to Schwab if the intervertebral disc is also removed.
	VCR	A variant of PSO in which the vertebral body is excised from the front of the spine in order to protect nerve roots in sensitive areas of the cervical and lumbar spine.
	Other...	→ to be specified.
Extent of surgery - deformity correction	C0/C1 or C0, C1/2 or C1, C2/3 or C2, C3/4 or C3, C4/5 or C4, C5/6 or C5, C7/Th1 or C7, Th1/2 or Th1, Th2/3 or Th2, Th3/4 or Th3, Th4/5 or Th4, Th5/6 or Th5, Th6/7 or Th6, Th7/8 or Th7, Th8/9 or Th8, Th9/10 or Th9, Th10/11 or Th10, Th11/12 or Th11, Th12/L1 or Th12, L1/2 or L1, L2/3 or L2, L3/4 or L3, L4/5 or L4, L5/S1 or L5, S1, Sacrum (S2-5), Coccyx, Ilium	Tick all treated segments or vertebral bodies.
Specify motion-preserving stabilisation	Intervertebral disc replacement	Intervertebral disc replacement, also known as disc arthroplasty.
	Dynamic stabilisation	Posterior dynamic technique.
	Interspinous spacer	Implants between the spinous processes.

Question	Response options	Explanations and definitions
	Lumbar pars screw	Lumbar pars screw.
	Other...	→ to be specified.
Extent of surgery - motion-preserving stabilisation	C0/C1 or C0, C1/2 or C1, C2/3 or C2, C3/4 or C3, C4/5 or C4, C5/6 or C5, C7/Th1 or C7, Th1/2 or Th1, Th2/3 or Th2, Th3/4 or Th3, Th4/5 or Th4, Th5/6 or Th5, Th6/7 or Th6, Th7/8 or Th7, Th8/9 or Th8, Th9/10 or Th9, Th10/11 or Th10, Th11/12 or Th11, Th12/L1 or Th12, L1/2 or L1, L2/3 or L2, L3/4 or L3, L4/5 or L4, L5/S1 or L5, S1, Sacrum (S2-5), Coccyx, Ilium	Tick all treated segments or vertebral bodies.
Other surgical measures	None	No other operational measures.
	VB augmentation with height restoration	Select this answer option if an implant for vertebral body augmentation (balloon kyphoplasty, stent or similar) was used in addition to the cement or if this was combined with vertebroplasty at different levels.
	VB augmentation without height restoration	Select this answer option if no implant for vertebral body augmentation was inserted into the vertebral body during the procedure, but only cement.
	Hardware removal	Removal of certain parts or the entire implant.
	Wound drainage	Application of a drain to support the drainage of wound fluids such as blood and/or pus.
	others...	→ to specify

Question	Response options	Explanations and definitions
Extent of surgery - Other surgical measures	C0/C1 or C0, C1/2 or C1, C2/3 or C2, C3/4 or C3, C4/5 or C4, C5/6 or C5, C7/Th1 or C7, Th1/2 or Th1, Th2/3 or Th2, Th3/4 or Th3, Th4/5 or Th4, Th5/6 or Th5, Th6/7 or Th6, Th7/8 or Th7, Th8/9 or Th8, Th9/10 or Th9, Th10/11 or Th10, Th11/12 or Th11, Th12/L1 or Th12, L1/2 or L1, L2/3 or L2, L3/4 or L3, L4/5 or L4, L5/S1 or L5, S1, Sacrum (S2-5), Coccyx, Ilium	Tick all treated segments or vertebral bodies.
Intraoperative adverse events	None	No intraoperative adverse events.
	Cement leakage requiring intraoperative therapeutic measures	For all cement leaks that require intraoperative therapeutic measures.
	Please describe the intraoperative therapeutic measures	If "Cement leakage requiring intraoperative therapeutic measures" is indicated, please describe the intraoperative therapeutic measures.
	Nerve root injury	Iatrogenic nerve root damage.
	Spinal cord injury	Iatrogenic spinal cord damage.
	Dura lesion	Iatrogenic dural lesion with cerebrospinal fluid leakage.
	Vascular injury	Iatrogenic injury to large vessels. Regular or even substantial bleeding in the surgical wound without injury to large vessels is not considered a complication and does not have to be reported as a vascular injury.
	Fracture of vertebral body (structures)	Iatrogenic fracture of the bony structures.
	Other...	→ to be specified.
Surgical re-intervention/intervention in the same session	None	No surgical re-intervention/intervention in the same session.
	Suture	Repair of an anatomical structure during surgery with a suture.
	(Fibrin) Glue	Application of a biological sealant to (supplement) repair or heal a dura injury.
	Implant reposition	Revision of the position of an implant, typically using screws and cages.

Question	Response options	Explanations and definitions
	Other...	→ to specify
Intraoperative general complications	None	No intraoperative general complications.
	Anaesthesiological	Complications during surgery due to anaesthesia / narcosis.
	Cardiovascular	Cardiovascular complications during surgery, including those not necessarily attributable to the surgical procedure..
	Pulmonary	Pulmonary complications during the surgery that are not necessarily caused by the surgical procedure, including those not necessarily attributable to the surgical procedure.
	Thromboembolism	Intraoperative clot (thrombus) in a blood vessel that becomes detached and is carried by the bloodstream to block another vessel (e.g. in the leg, kidney, lung [pulmonary embolism], brain [stroke] or gastrointestinal tract).
	Death	Death during the surgery.
	Other...	→ to be specified.
Postoperative surgical complications	None	No postoperative surgical complications.
	Epidural haematoma	Bleeding haematoma outside the dural sac but inside the bony spinal canal.
	Other haematoma	Haematoma elsewhere, but in connection with the surgery.
	Radiculopathy	Impairment of a nerve root, which can lead to radicular pain, weakness, numbness or difficulty controlling certain muscles.
	Cerebrospinal fluid leak / pseudomeningocele	Leakage of cerebrospinal fluid including fistula.
	Motor dysfunction	Motor / muscular dysfunction, new or worsening since surgery.
	Sensory dysfunction	Sensory dysfunction, new or worsening since surgery.
	Bowel/bladder dysfunction	Bowel or bladder dysfunction due to iatrogenic damage, new or worsening since surgery.
	Superficial wound infection	Postoperative superficial wound infection.
	Deep wound infection	Postoperative deep (subfascial) wound infection.
	Malposition of the implant	Incorrect position of the implant.
	Implant migration or loosening	Screw loosening, cage sintering or implant migration.

Question	Response options	Explanations and definitions
	Implant breakage	Breakage of a screw, rod, cage or other implant.
	Implant assembly failure	Breakage of an expandable cage, failure of the cross-connectors, assembly error.
	Wrong level	Wrong level.
	Other...	→ to be specified.
[If implant migration, fracture of implant, failure of implant assembly] **Specify affected implant**	Screw	Tick Screw if the affected implant is a screw.
	Rod	Tick Rod if the affected implant is a rod.
	Cage	Kreuzen Sie Cage an, wenn das betroffene Implantat ein Cage ist.
	Other…	Tick Rod if the affected implant is a rod.
Postoperative general complications	None	No intraoperative general complications.
	Cardiovascular	Cardiovascular complications after the surgery, such as cardiac arrhythmia.
	Pulmonary	Pulmonary complications after surgery, such as pulmonary oedema with dyspnoea.
	Cerebral	Cerebral complication after surgery, such as stroke.
	Kidney / urinary tract	Complications in the kidneys or urinary tract, such as infection.
	Liver / GIT	Complications of the liver or gastrointestinal tract, such as diarrhoea.
	Thromboembolism	Clot (thrombus) in a blood vessel that becomes detached and is carried by the bloodstream to block another vessel (e.g. in the leg, kidney, lung [pulmonary embolism], brain [stroke] or gastrointestinal tract).
	Positioning-related	Positioning-related complication.
	Death	Death after surgery during hospitalisation.
	Other...	→ to be specified.
Re-intervention after index surgery	none	No re-intervention.
	Haematoma evacuation	A haematoma evacuation.
	Suture/glue	A suture or a (fibrin) glue.
	Hardware removal	Partial or total implant removal.

Question	Response options	Explanations and definitions
	Hardware re-implantation	Reimplantation.
	Abscess drainage	Abscess drainage.
	(further) decompression	An additional decompression.
	Other...	→ to be specified.
Discharge date	[Date]	The date of discharge from the hospital or transfer to another medical facility.