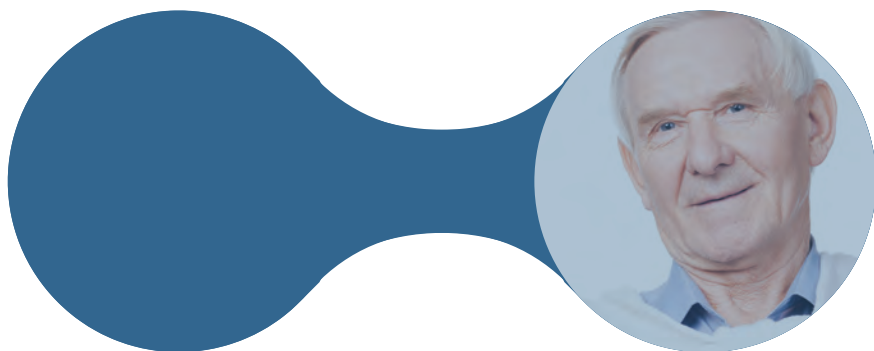
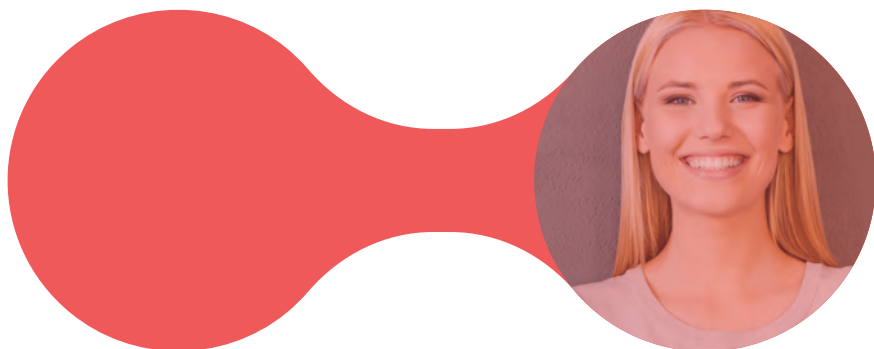




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Australian[®]
Spine Registry



2018

Annual Report

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FOREWORD

FROM THE CLINICAL LEAD OF THE AUSTRALIAN SPINE REGISTRY

It gives me great pleasure to introduce the first Annual Report of the Australian Spine Registry (ASR). Commencing in late 2016, 2018 has been an exciting year for the ASR. Patient recruitment and data collection commenced in January 2018. The registry has been collecting data for over 12 months now and comprises over 500 patients in the register. Patients have been overwhelmingly positive about the ASR as is evident by their participation and willingness to complete the registry specific questionnaires pre-operatively and post operatively. Participating surgeons and their practice staff have also shown enthusiasm and dedication, incorporating the registry data collection into their clinical practice. Without this engagement the ASR would not be possible. Even at this early stage, the information presented in this annual report is indicative of what the registry can deliver.

I would like to thank Dr Esther Apos, our registry coordinator, Associate Professor Susannah Ahern, Professor John McNeil and their staff at the Department of Epidemiology and Public Health, Monash University, Mr Phillippe Roussouly, our software provider, our Steering Committee members, participating surgeons and pilot participants. I would also like to acknowledge the assistance and advice of Mr Adrian Cosenza and Mr Jeff Clark from the Australian Orthopaedic Association, and Mr Matthew Payne, Tresscox Lawyers concerning administrative, financial and legal matters.

The ASR Pilot has been made possible by generous donations from industry, health insurers and the Spine Society of Australia.

We believe the registry will improve the full spectrum of spinal surgical care, from individual patient outcomes to the development of good government policy based on accurate data.



A handwritten signature in blue ink, consisting of a stylized 'M' and 'J' followed by a long horizontal stroke.

Mr Michael Johnson MBBS, FRACS (Orth)
Chairman, Australian Spine Registry Steering Committee
Clinical Lead, Australian Spine Registry

LIST OF ABBREVIATIONS

ACDF	Anterior Cervical Discectomy and Fusion, or Anterior Cervical Decompression and Fusion
AOA	Australian Orthopaedic Association
ASR	Australian Spine Registry
DEPM	Department of Epidemiology and Preventative Medicine
EQ-5D-3L	EQ-5D 3-Level
EQ-VAS	EQ-5D Visual Analogue Score
GCP	Good Clinical Practice
NDI	Neck Disability Index
ODI	Oswestry Disability Index
PROMs	Patient Reported Outcome Measures
QoL	Quality of Life
SOP	Standard Operating Procedure
SSA	Spine Society of Australia

COMMON TERMS AND DEFINITIONS

Cauda equina syndrome	A condition that occurs when the bundle of nerves below the end of the spinal cord known as the cauda equina is damaged. Signs and symptoms include low back pain, pain that radiates down the leg, numbness around the anus, and loss of bowel or bladder control
Cervical	Between the occiput and T1
Claudication	Impairment in walking, or pain, discomfort, numbness, or tiredness in the legs that occurs during walking or standing and is relieved by rest
Deformity	A loss of the normal curvature of the spine
Discectomy	A type of surgery to decompress nerve compression secondary to disc herniation
EuroQoL™ EQ-5D-3L	EQ-5D is a standardised measure of health status developed by the EuroQol Group in order to provide a simple, generic measure of health for clinical and economic appraisal. ¹ 5D represents five dimensions; 3L represents three levels.
Fusion	Surgery to permanently join two or more vertebrae in the spine eliminating motion between them.
Glassman Classification	A diagnostic classification of symptoms, pathology and site of neural compression for lumbar spine registry usage
Opt out	Patients who have been provided a registry information brochure and who have elected not have their data included in the registry
Post-Operative follow up	6, 12, and 24 months after surgical treatment
Pre-operative follow-up	Up to 3 months prior to surgery
Spondylolisthesis	A condition in which one vertebra slips forward over the one below it.
Thoraco-lumbar	Between T1 and the pelvis

EXECUTIVE SUMMARY

The Australian Spine Registry (ASR) is proud to present its first Annual Report. The ASR commenced recruiting patients and collecting data in January 2018 and this report summarises the first year of patient recruitment and data collection. The data presented in this report was collected for all participants recruited between 15 January 2018 and 19 January 2019.

The registry pilot has had a successful year of streamlining its operations, data collection and data analysis. One of the ASR's strengths is data acquisition via pre-operative and post-operative patient questionnaires. The registry is currently collecting 1-year post-operative follow up data from the initial contributing participants to the registry.

This pilot stage is primarily examining operational issues related to expense, collection of demographic, diagnostic, treatment and PROMs data. Preliminary data analysis is looking at diagnostic cohorts and methods of data analysis.

From the preliminary data examined:

- 56% males and 44% females with a median age at the time of surgery of 62 years for males and 66 years for females;
- 37.7% of participants presented with one or more comorbidity;
- Discectomy patients were generally younger and had fewer comorbidities when compared to the total participant cohort;
- Patient reported questionnaire preliminary analysis for both participant cohorts examined (total and discectomy) showed:
 - o ODI scores improved in the 6-month time period;
 - o EQ-5D-3L scores improved in the 6-month time period.

Looking ahead, the ASR pilot will continue to streamline its operational process and will be investigating information migration from practice management software to the registry database in order to facilitate patient information and data accuracy.

The pilot will be evaluated mid-2020 and further funding will be actively sought to enable the registry to expand. Funding support for the registry pilot has been through the following medical device companies, health insurers and the Spine Society of Australia (SSA).



SNAPSHOT OF THE AUSTRALIAN SPINE REGISTRY

(Patients recruited up to 19 January 2019)



517

PATIENTS



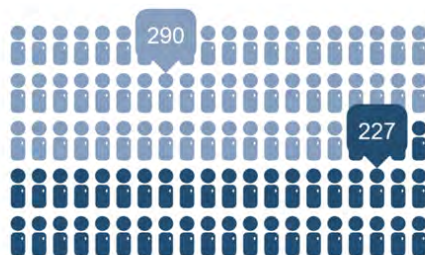
11

SURGEONS



13

SITES



56.1%

MALE

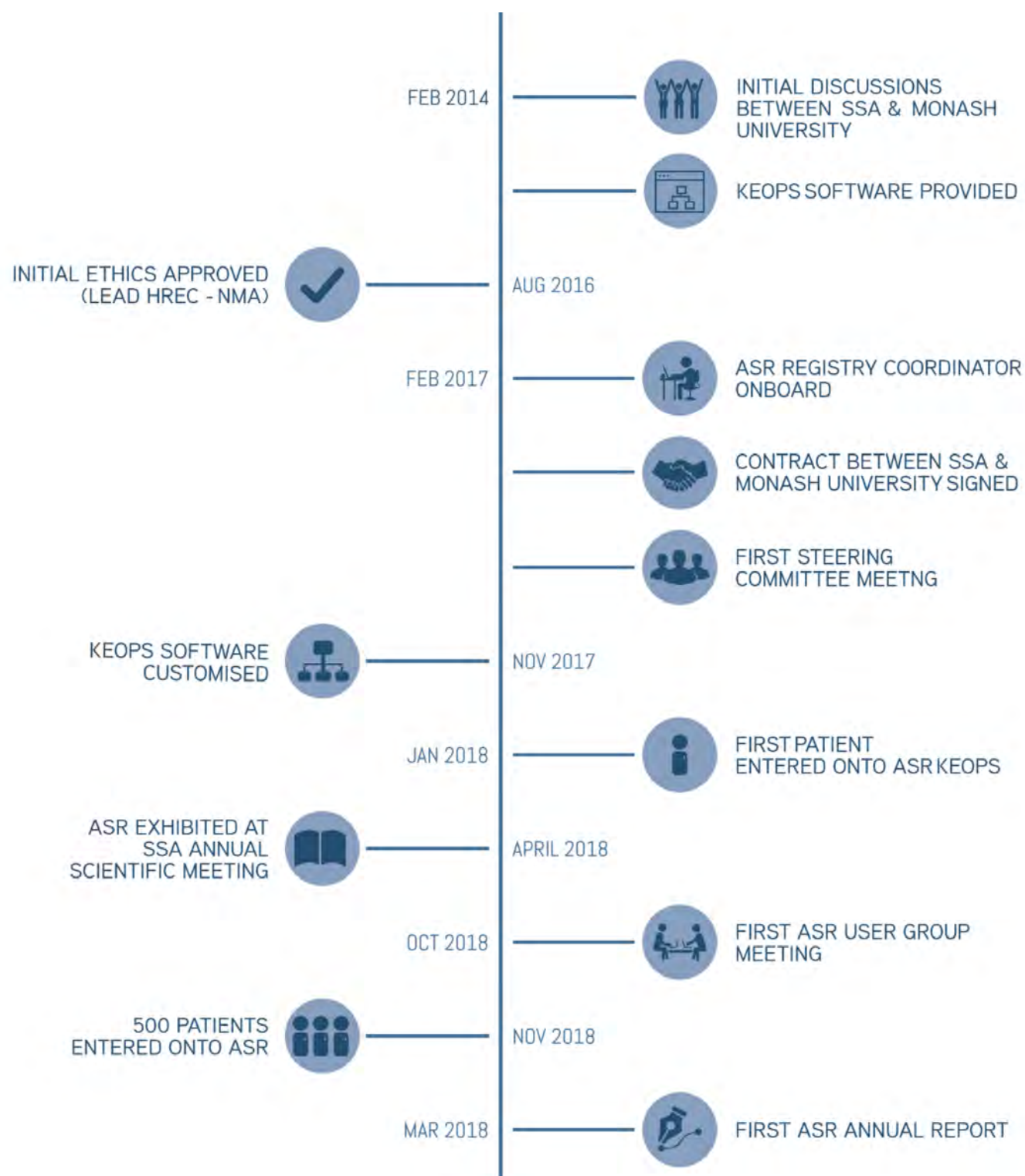
43.9%

FEMALE

	PRE-OP	6 MTH
PARTICIPANTS ELIGIBLE	517	296
COMPLETE WITH DATA	440	206
COMPLETE WITH DATA (%)	85.1%	69.6%

MILESTONES

Key milestone in the development of the ASR.



BACKGROUND AND RATIONALE

Back pain is the world's leading cause of life years lived with disability.² In Australia, an estimated one in seven people (≈ 3 million) had back problems in 2011-12 of whom 44% (or 495,000) were restricted in their activities to a greater or lesser extent (e.g. mobility, communication or self-care). Back problems often lead to poorer quality of life, psychological distress, bodily pain and disability. Spine surgery is usually the last resort in the treatment of back problems and while surgery is not necessary or suitable for everyone with back problems, approximately 45,000 Australians undergo spine surgery every year.³

One of the most basic tools needed to enhance outcomes for spine surgery patients across Australia is accurate, prospective, real time data including short- and long-term results of spine surgery. Without such data, it is not possible to meaningfully understand benefits of one surgery type over another, compare different devices and assess impacts of new developments in techniques and devices. This unique data can be collected using a registry. Leading health authorities are now recognizing that unique scientific, clinical and social insights can be collected through clinical registries.⁴

There is now recognition world-wide that unique clinical insights can be gained by large scale registries.⁵ Where they have been introduced at a state or national level in Australia, they have become one of the most clinically valued tools for quality improvement.⁶

There are at least 24 prospective spine surgery registries currently running throughout Europe, North America, United Kingdom; two of which collect information at an international level.⁷ In Australia, however, there is no national spine surgery registry. The Spine Society of Australia (SSA), founded in 1990, is a multidisciplinary organization with both orthopedic and neurosurgical members, and is the driver for establishing Australia's first national spine surgery registry.

The Australian Spine Registry (ASR) aims to be an essential platform for spine surgery research in Australia. The ultimate goal of the registry is to capture information from large numbers of spine surgery patients from multiple surgical and geographic sources with particular focus on the assessment of patient reported outcomes.

The Spine Society of Australia (SSA) in conjunction with Monash University commenced the development of the ASR pilot beginning of 2016. The pilot registry commenced patient recruitment and data collection on 15th of January 2018.

GOVERNANCE

Steering Committee

The ASR Steering Committee Membership comprises a multidisciplinary group of experts that are responsible for the governance of the ASR, in accordance with the Australian Commission on Safety and Quality in Healthcare's Operating Principles (2008) and Framework (2014) for Clinical Quality Registries. The Steering Committee's focus is on providing strategic direction and ensuring deliverables are met by the ASR.

Current membership of the steering committee consists of:

- 4 Orthopaedic Spine surgeons
- 3 Neurosurgeons
- 3 Monash University Academics

Management Committee

A management committee meets monthly and oversees the day to day operation of the registry and has been based at Monash University since February 2017. It comprises the registry secretariat and the Steering Committee Chair

Registry Procedures and Policies

Key achievements of the Steering Committee have been the establishment of key policies and procedures including:

- ASR Protocol
- ASR Steering Committee Terms of Reference
- Conflict of interest Policy
- Communications Policy
- Data Access Policy

Data Custodian

Monash University and the SSA have shared custodianship of the data, which includes accountability of the privacy, security and integrity of patient information held within the registry.

Pilot Phase of Registry

The ASR is currently in a pilot phase, where the dataset, methods and data tools are being tested at a sample of participating sites across Australia. The aim of the pilot registry is to test and evaluate current ASR processes and outcomes, and to make recommendations regarding the feasibility for a national rollout of the ASR. The pilot phase of the ASR will continue until the end of 2019.

REGISTRY METHODOLOGY

Registry Population

The registry population includes any person undergoing elective surgery at private and public hospitals in Australia that involves the spine.

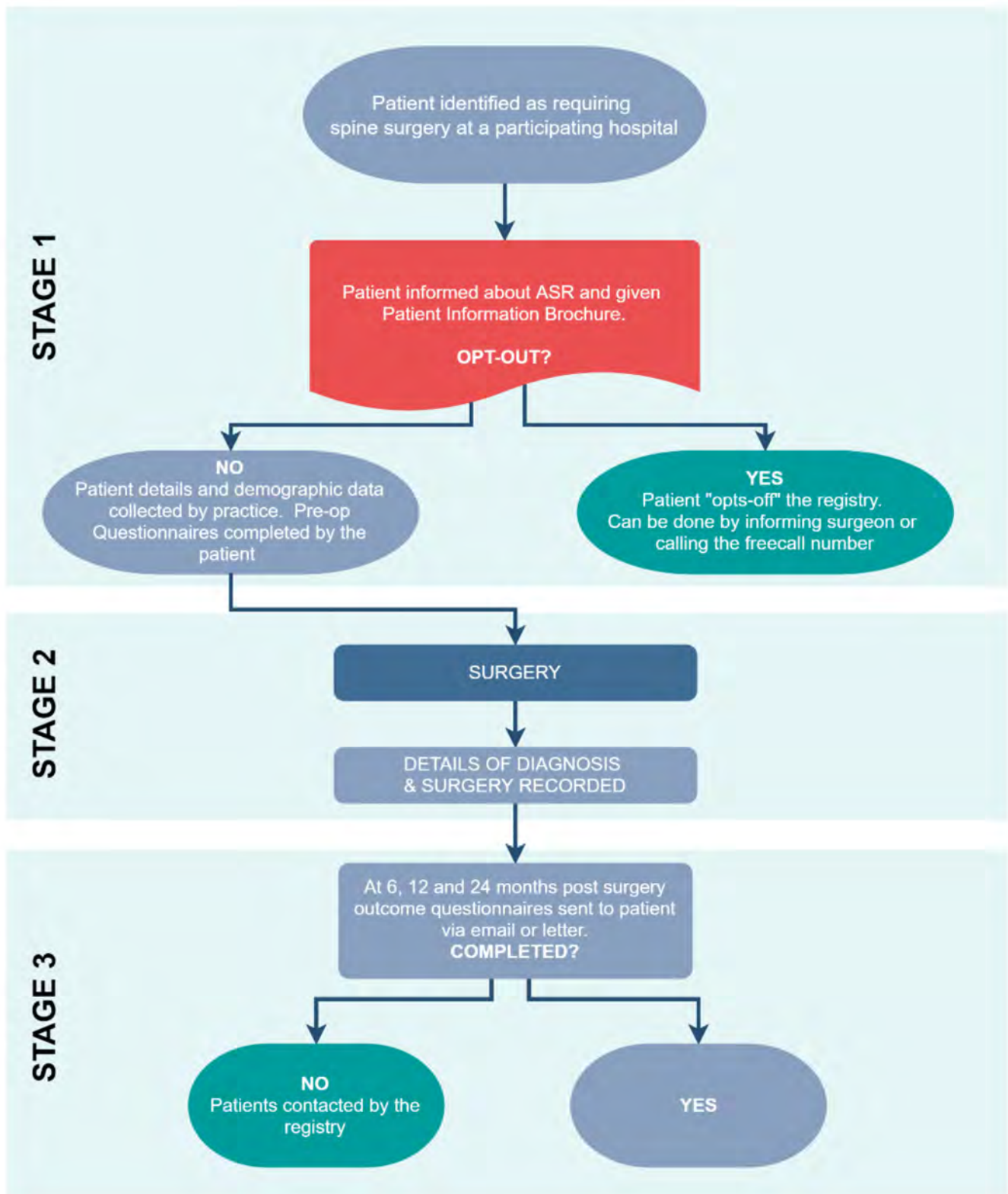
Inclusion Criteria

- Patients 18 years of age and older with surgery date which falls within the time frame specified for inclusion. This date will vary per institution/surgeon.
- Patients willing and able to provide informed consent and willing to accept the registry requirements.

Exclusion Criteria

- Patients under 18 years of age.
- Trauma patients
- People whose primary language is other than English and,
- People with a cognitive impairment, an intellectual disability or a mental illness.

Registry Process



DATA COLLECTION PROCESS

ASR Database

Data is collected by practices, surgeons and Monash registry staff and entered into the ASR KEOPS database. KEOPS is a data management tool designed and constructed specifically for spine specialists.⁸

KEOPS is a fully customizable data collection tool which can track clinical outcomes and deliver and follow-up patient questionnaires at desired intervals. Data entry is achieved through click boxes and drop-down menus and minimises time spent by surgeons on surgery outcome reporting. The ability to customise KEOPs for Australian practices and its ease of use were key reasons for this software being selected for this pilot.

Research Ethics and Governance

The ASR received ethics approval under the National Mutual Acceptance (NMA) scheme through Melbourne Health, Victoria, in August 2016. All participating public hospitals have governance authorisation. Depending on the private hospital, either ethics and/or governance authorisation has been granted.

Glassman Classification

The registry has customised the KEOPs database to include the Glassman Classification in the diagnosis section which is a diagnostic coding matrix that codes three primary elements commonly used in clinical decision making:⁹

- Symptoms,
- Structural Pathology,
- Compressive Pathology.

The registry uses the Glassman classification as a clinically relevant diagnostic scheme to analyse registry cohorts.

Patient Reported Outcome Measures

The ASR collects patient reported outcome measures (PROMs) which are key for following patient progress and to evaluate the quality of care.

The ASR uses the Oswestry Disability Index (ODI) for low back pain and the Neck Disability Index (NDI) for acute or chronic disability of the neck which have been reported to be the most common and reliable PROM instrument for the assessment of pain and disability.^{10 11-13} The ODI and NDI indicate the severity of functional disability experienced by patients using 10 domains and which have a score range of 0 (best measured health) to 5 (worst measured health).

General quality of life (QoL) measures are also collected using the EuroQol five dimension (EQ-5D™) questionnaire.¹³ The EQ-5D™ was designed as a standardized measure of health status and is primarily designed for self-completion by respondents taking only a few minutes to complete.¹⁴ The registry uses the EQ-5D-3 Level (EQ-5D-3L) version. The EQ-5D-3L consists of 2 pages: the EQ-5D descriptive system and the EuroQoL visual analogue scale (EQ-VAS).

The EQ-5D-3L descriptive system comprises the following five dimensions: mobility, self-care, usual activities, pain/discomfort and anxiety/depression. Each dimension has 3 levels: no problems, some problems, and extreme problems. Participants are asked to indicate his/her health state by ticking the box next to the most appropriate statement in each of the five dimensions. Results describe the patient's health state.¹

The EQ-VAS records the patient's self-rated health on a vertical visual analogue scale where the endpoints are labelled 'Best imaginable health state' and 'Worst imaginable health state'. The EQ-VAS can be used as a quantitative measure of health outcome that reflects the patient's own judgement.¹

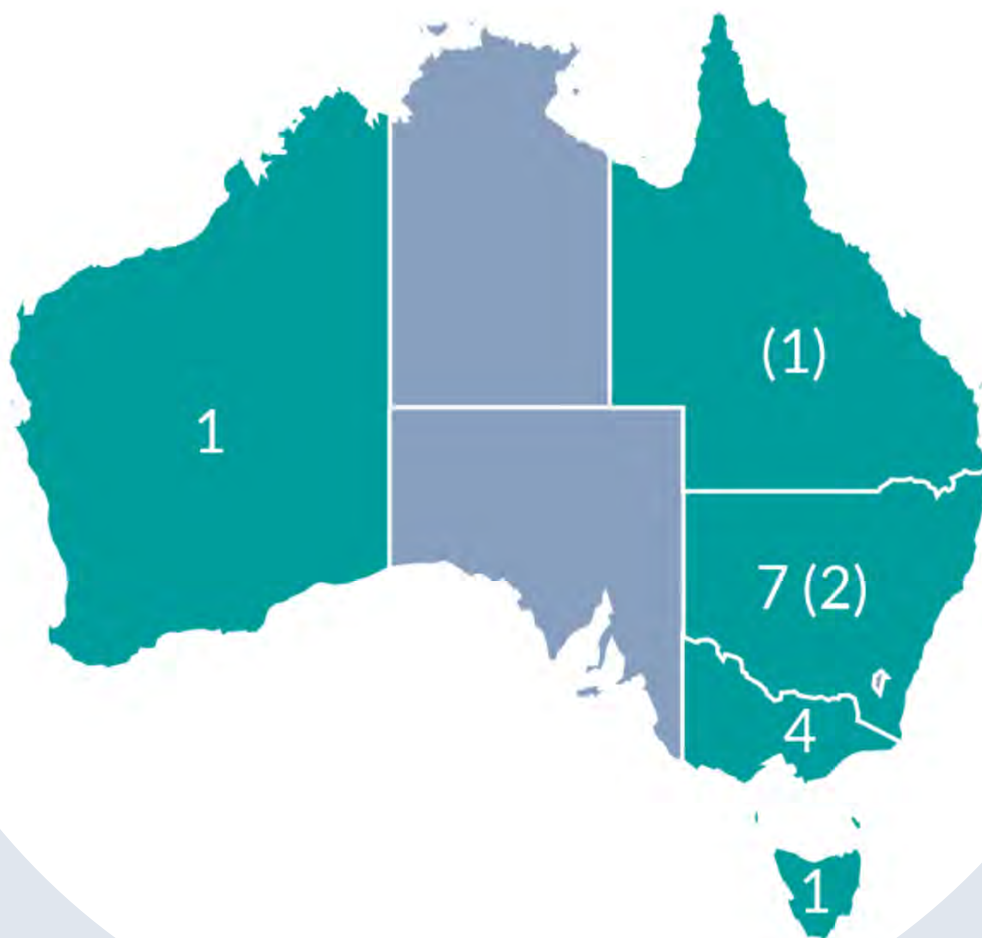
SUMMARY OF THE REGISTRY AS AT 19 JANUARY 2019

Surgeon and Hospital Engagement

In 2018 the ASR had 13 participating hospitals (3 public and 10 private) across Australia (Figure 1). The registry is currently in the process of adding another three hospitals (as shown in brackets).

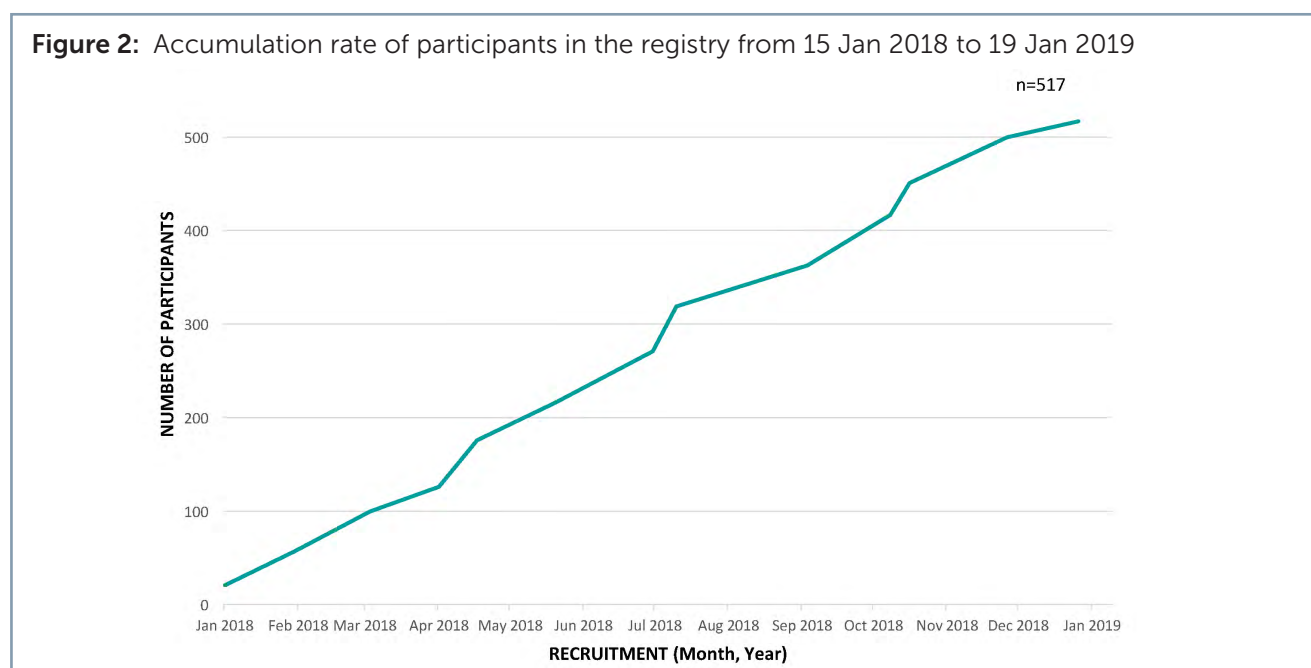
Spine surgery is performed by both orthopaedic surgeons and neurosurgeons. Currently the ASR has nine orthopaedic spine surgeon and two neurosurgeons actively participating.

Figure 1: Number of hospital sites participating and in progress with the ASR across Australia



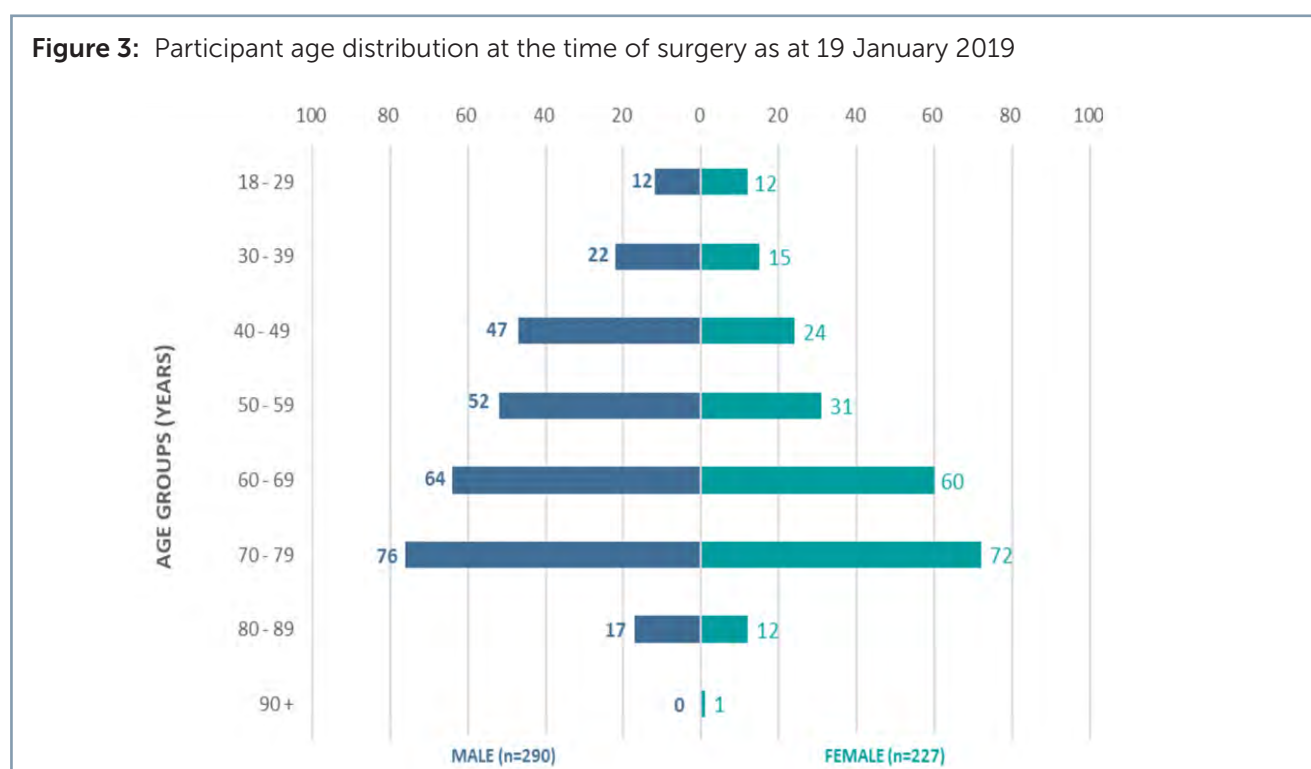
Participant Uptake

Active recruitment of patients commenced on 15th January 2018. Participant recruitment over time has been consistent over the 12-month period as shown in Figure 2.



Participant Demographics

As at 19 January 2019, there were 517 patients participating in the registry. There were 290 (56%) males and 227 (44%) females.



Registry Communications and Responses

The registry collects information about the participants before and after surgery in the form of self-completed questionnaires. Pre-operatively, these questionnaires are completed either on paper or electronically, directly through the KEOPs database web-based portal.

Post-operatively, participants automatically receive the questionnaires either by email or mail at 6, 12 and 24 months after their surgery. At the time of this publication, 78.2% of participants have provided an email address; 95.5% of participants have provided a mobile number.

If the registry has not received completed questionnaires from participants within the required time frame, the registry follows up each participant with up to 3 phone calls.

Figure 4 outlines the total number of automated emails and mail contact attempts by the registry up to 19 January 2019. Participants with active email accounts responded and completed their questionnaires after an average of 5 automated email communications by the registry. Participants with no active email and who received the questionnaires by mail, responded after 2 contact attempts (1 letter and 1 phone call).



Data Entry by Surgeons

Diagnoses and surgical information are entered into the KEOPs database directly by surgeons. Diagnosis data include:

- Comorbidities,
- Deformity,
- Degenerative disease,
- Glassman classification,
- Infection,
- Inflammation,
- Revision surgery,
- Spondylolisthesis,
- Tumour.

Surgical treatment information includes:

- Surgical approach,
- Staging,
- Neuromonitoring,
- Navigation,
- Type of surgery and instrumentation,
- Bone grafting.

The time frame by which data is entered by surgeons varies as some surgeons enter information immediately following a procedure whereas others enter data in batches. The registry management consistently provides feedback and support to surgeons and their practice staff regarding patient recruitment and data completeness. Practices have also been audited to ensure that all eligible patients are recruited into the registry and that surgeons are not “cherry picking” participants. The data entry completion rate by surgeons is shown in Figure 5

Figure 5: Data completion rate by Surgeons



*for all surgery completed up to 19 January 2019

Comorbidities Captured by the Registry

Comorbidity data is collected and entered into the database by surgeons. The following list outlines the comorbidity categories currently collected by the ASR. The comorbidity data fields will be re-examined to maximize clinical relevance without compromising compliance.

- Diabetes Type 1,
- Diabetes Type 2,
- Endocrine-metabolic,
- Gastrointestinal,
- Hepatic,
- Hypertension,
- Neurological,
- Osteoporosis,
- Psychiatric/Behavioural,
- Renal,
- Rheumatological,
- Thrombo-embolic,
- Vascular,
- Other.

Figure 6 shows the proportion of patients within the registry with comorbidities. As indicated in Figure 6, 37.7% of participants presented with one or more comorbidity. The frequency of participants having 1 or more comorbidities is shown in Figure 7.

Figure 6: Comorbidities reported pre-operatively (n=517).

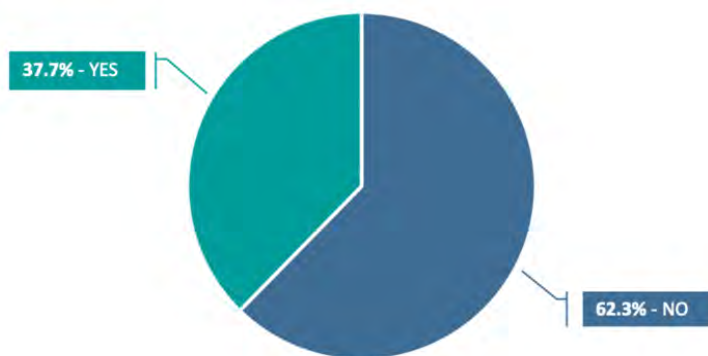
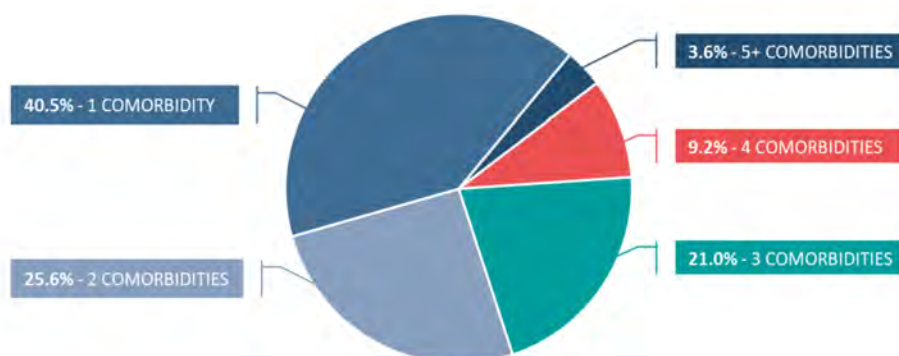


Figure 7: Number of comorbidities reported (n=194)



Procedures Captured by the Registry

The ASR is currently collecting data on all cervical, thoraco-lumbar and deformity spine surgery procedures. However, because of the diversity of spine surgery, the registry is currently focussing on three patient procedure cohorts:

1. Discectomy,
2. Anterior Cervical Discectomy and Fusion (ACDF),
3. L4-L5 Spondylolisthesis.

This report will focus only on the discectomy cohort as participant numbers for ACDF and L4-L5 spondylolisthesis are insufficient for accurate data analysis at this point in time.

Discectomy

The discectomy cohort was selected using the following criteria:

- Inclusion:
 - o Surgery Type – Lumbar Discectomy only,
 - o Number of levels = 1,
 - o Number of stages = 1.
- Exclusions:
 - o Revision,
 - o Scoliosis,
 - o Fusion.

As of 19 January 2019, 71 participants met the discectomy cohort inclusion criteria. This cohort was analysed as a subsample, in addition to analysis of the total participant cohort for:

- Demographics,
- Comorbidities,
- Glassman Classification,
- Pre and post-operative patient reported outcome measures for:
 - o ODI scores,
 - o EQ-5D-3L scores.

The findings of this sub-analysis are presented below, and are also presented against the total ASR patient cohort (n=517).

Demographics

The 71 discectomy procedures were performed predominately on male participants. As at 19 January 2019, there were 52 males (73%) and 19 females (27%) in this group as shown in Figure 8. The median age of males was 45.5 years and females 47.0 years, which is younger than the median patient age from the total ASR participant cohort (62 years for males and 66 years for females).

Figure 8: Age distribution of discectomy patients by gender



Comorbidities - Total and Discectomy

The number of participants that were reported with a comorbidity is shown in Table 1 below; 21.1% of discectomy participants were reported to have at least one comorbidity; 37.5% of total participants were reported to have at least one comorbidity. Participants were further categorised into groups by the number of comorbidities reported (Table 2). This table highlights that the discectomy patient cohort is not only younger but have fewer comorbidities.

Table 1: The number of participants diagnosed with any comorbidity prior to surgery

Any comorbidity	Total ASR participants, (%) (n=517)	Discectomy only, (%) (n=71)
Yes	37.7	21.1
No	62.3	78.9

Table 2: The percentage of participants reported having ≥ 1 comorbidity

Number of comorbidities	Total ASR participants, (%) (n=515)	Discectomy only, (%) (n=71)
0	62.5	78.9
1	15.3	9.9
2	9.7	5.6
3	7.9	5.9
4	3.5	0
5	1.2	0

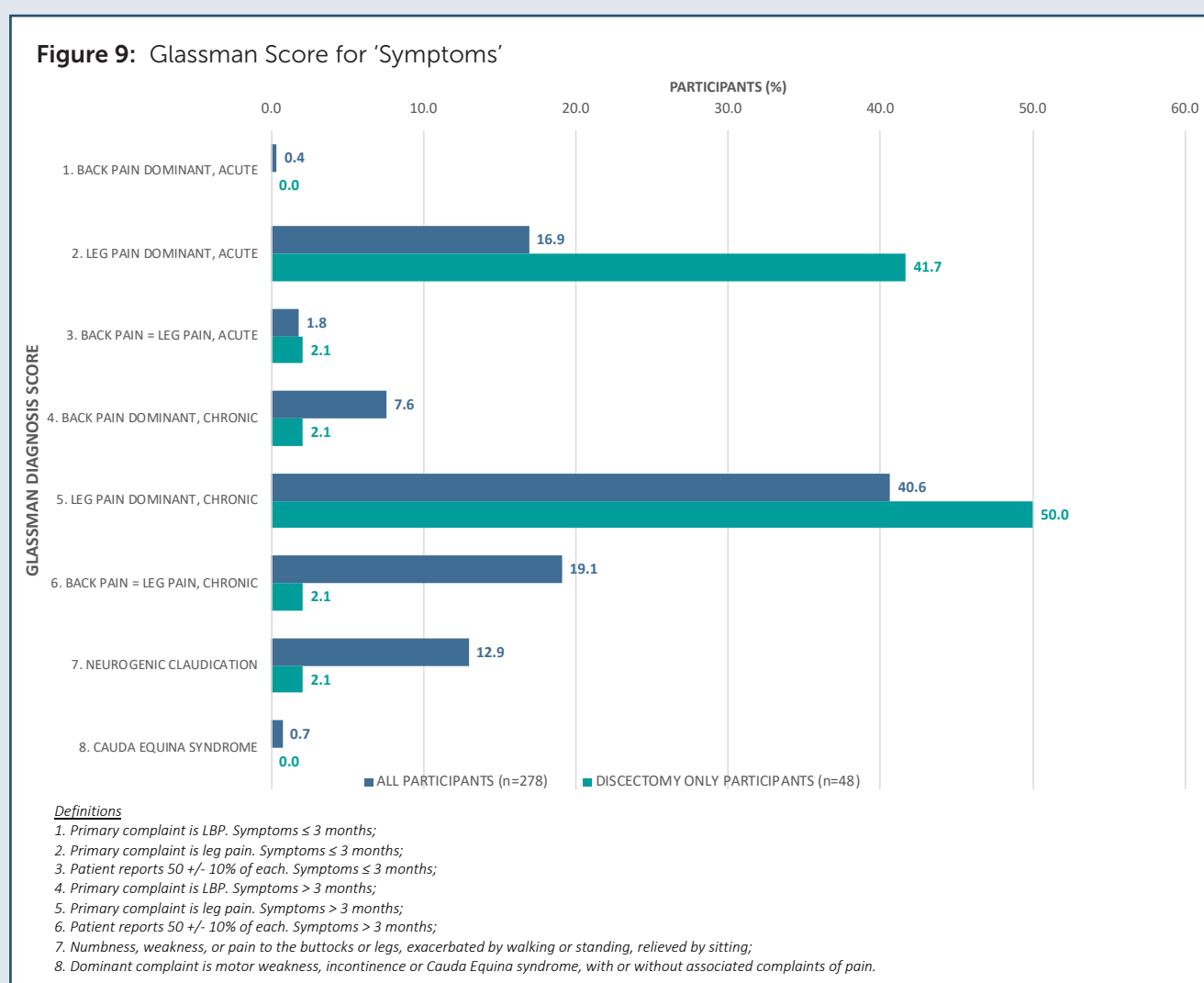
Glassman Classification Scores – Total and Discectomy

The Glassman classification scores for total participants and the discectomy cohort were analysed.

Out of all 517 patients on the registry at the time of this report, 53% had completed Glassman scores recorded. In the discectomy cohort sub-sample, the figure was 67%.

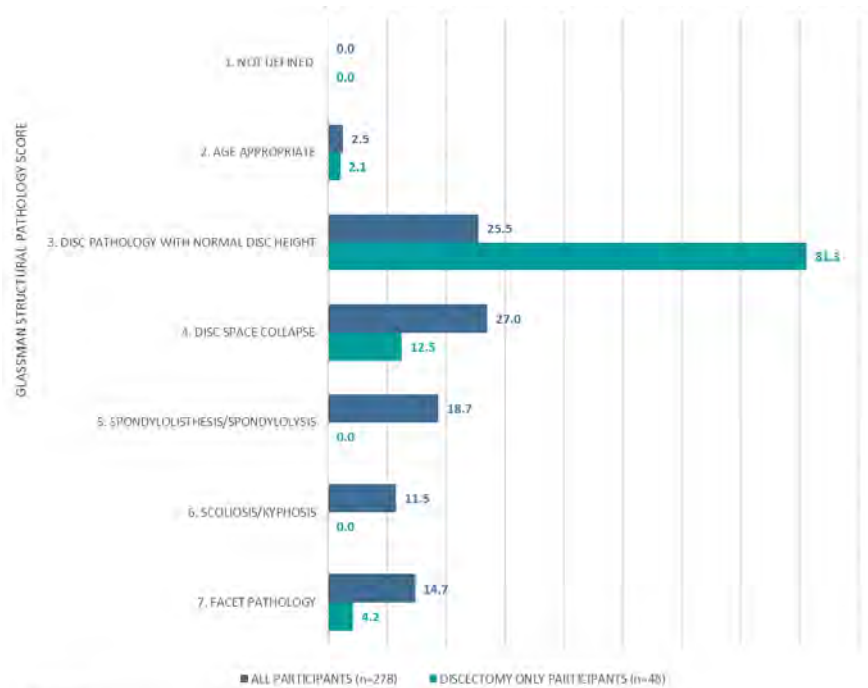
Figure 9, Figure 10 and Figure 11 show all ASR participants against those undergoing discectomy only across all three Glassman elements.

For ‘Symptoms’, the proportion of participants reporting acute and chronic leg pain was greater in the discectomy only cohort than it was when the entire cohort was examined. Back pain was less commonly reported, as was neurogenic claudication. This is consistent with the commonly held clinical presentation of disc herniations, (Figure 9).



For ‘Structural Pathology’, surgeon comprehension and grading is consistent in describing the discectomy cohort (Figure 10).

Figure 10 : Glassman Score for 'Structural Pathology'

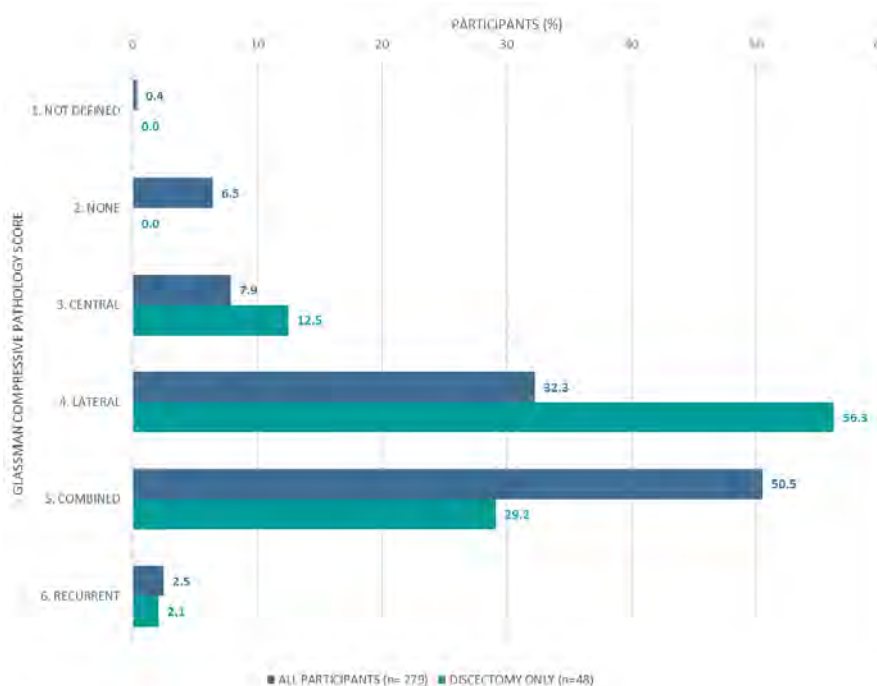


Definitions

1. No study ordered, or no study interpretation available for determination of structural pathology;
2. Structural changes are consistent with normal aging and not a clinically relevant source of symptoms;
3. Disc pathology without significant loss of disc height, includes disc herniation, internal disc desiccation and annular tear;
4. Disc pathology with mechanical disc space collapse with or without associated disc space pathology;
5. Any listhesis, including degenerative and isthmic spondylolisthesis;
6. Lumbar spine deformity (including localized scoliosis or kyphosis);
7. Significant facet arthrosis or degeneration, including synovial cysts

For 'Compressive Pathology', the most common types of disc herniations are those compressing in the central and lateral recesses, as is typically reported by clinicians in discectomy patients, (Figure 11).

Figure 11: Glassman Score for 'Compressive Pathology'



Definitions

1. No study ordered, or no study interpretation available for determination of compressive pathology;
2. No clinically relevant compressive pathology;
3. Compression in the central canal region (between the lateral margins of the dura) from any etiology;
4. Compression in the lateral recess or foraminal regions (lateral to the lateral margins of the dura) from any etiology;
5. Compression in the central canal and lateral recess/ foraminal regions from any etiology;
6. Recurrent compression following previous surgical treatment at the same level, either in the central canal and/or lateral recess/ foraminal regions

PROMs Analysis

The Oswestry Disability Index (ODI) and the EQ-5D-3L scores are presented for all participants and for the discectomy cohort pre-operatively and at 6 months post-operatively (12-month data unavailable due to initial limited period of data collection). It must be noted that these results show unadjusted outcomes and must be interpreted with caution. Adjustments for known predictors of outcomes after spine surgery such as age, sex and severity of condition at baseline have not been performed at the time of this publication and may account for some of the difference seen in the figures presented below.

Oswestry Disability Index (ODI)

Of the total patient cohort analysed at the time of this publication, 431 patients had completed pre-operative ODI questionnaires (for lower back pain symptoms) and 189 patients had reached and completed the 6-month post-operative time point. For the discectomy cohort, 71 participants had completed their pre-operative questionnaires and of those, 28 had reached and completed the 6-month follow up. Pre-operative and 6-month post-operative follow up ODI scores are shown for all participants who completed an ODI and for the discectomy cohort, (Figure 12 and Figure 13). It can be seen that there is a shift to the left in the overall ODI scores for both the total participant group and the discectomy cohort at the 6-month follow up time point which suggests an improvement over the 6-month period (where a lower ODI score indicates better relief from pain and disability).

Figure 12: ODI scores for ALL participants who completed the ODI pre-op and at 6-months post-op

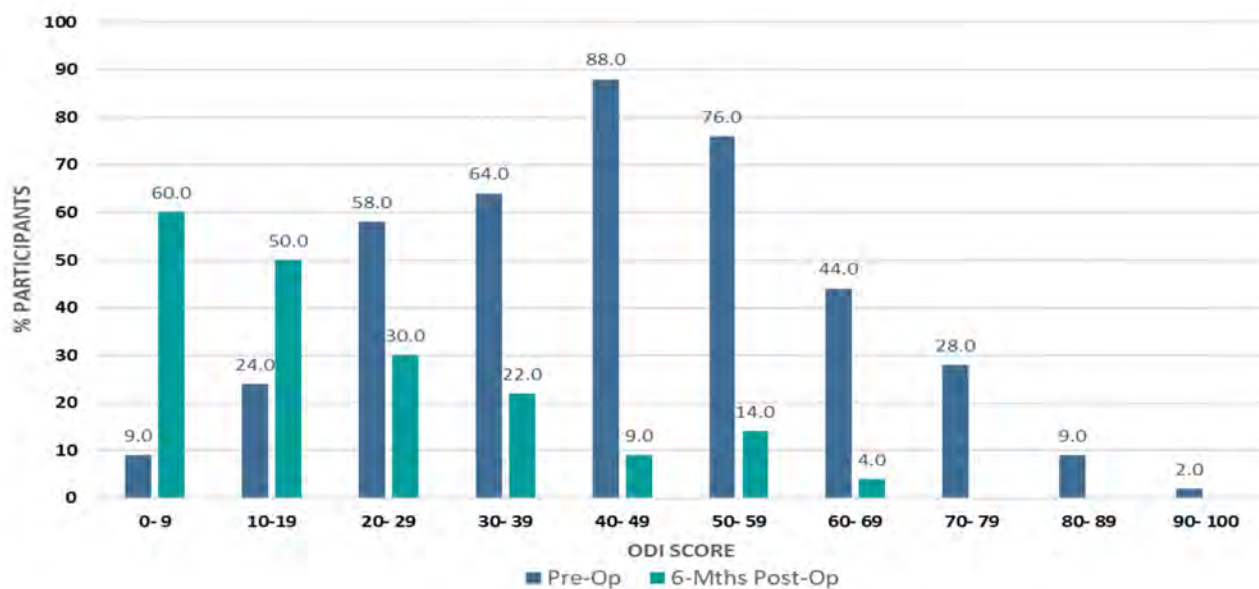
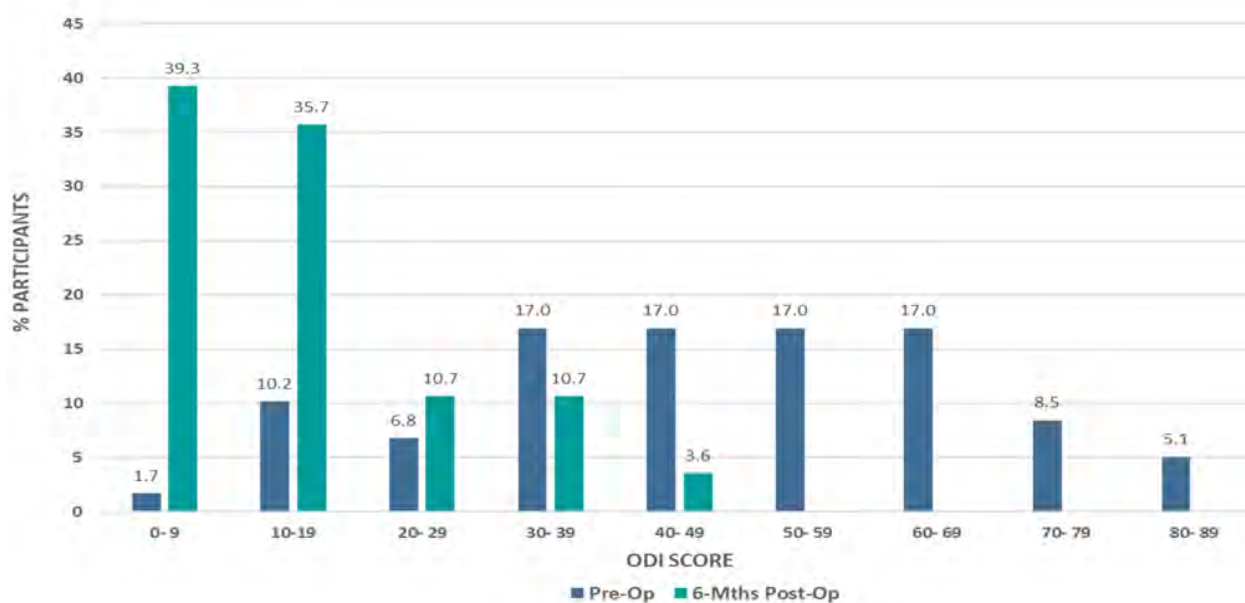


Figure 13: ODI scores for DISCECTOMY participants who completed the ODI pre-op and at 6-months post-op



Analysis of each of the ten ODI domains for the discectomy cohort (71 patients initially, with 28 patients completing follow-up ODIs) is shown in Figure 14. All 28 patients answered the questions in nine categories of the ODI pre and post-operatively except for the sexual activity domain where only 2 participants did not answer this question. Figure 14 shows the mean number of ODI domain points at pre-operatively and at 6-months post operatively. Average scores across all domains were lower 6-months post-operatively than pre-operative.

Figure 14: Discectomy cohort mean ODI scores for each domain.



The Minimum Clinically Important Difference (MCID) is a threshold used to measure the effect of clinical treatments and has been reported to be 12.8 for the ODI.¹⁵ This figure has been used to define MCID for this ASR cohort. The number and proportion of participants undergoing discectomy only that fell within or exceeded this MCID on the ODI from pre-op to 6-months post operatively is 100% (Table 3). For total ASR participants for whom a pre and post op MCID was measured, 98.8% had a MCID within or exceeding 12.8. This initial data suggests that many patients recorded in the ASR have improved since their procedure.

Table 3: Proportion of participants falling within or exceeding the MCID for ODI from pre-op to 6-month post-op

ODI*	ALL PARTICIPANTS, % (n=170)	Discectomy only, (%) (n=71)
Exceeding the MCID (Improved)	65.9	76.0
Within the MCID (Unchanged)	32.9	24.0
Exceeding the MCID (Worsened)	1.2	0.0

*Only participants that have completed both timepoint questionnaires are included.

EQ-5D-3L

Applicable to a wide range of health conditions and treatments, the EQ-5D provides a simple descriptive profile and a single index value for health status that can be used in the clinical and economic evaluation of health care as well as in population health surveys.

The EQ-5D-3L descriptive system comprises the following 5 dimensions: mobility, self-care, usual activities, pain/discomfort and anxiety/depression. Each dimension has 3 levels: no problems, some problems, extreme problems. The EQ-VAS records the participants' self-rated health on a vertical, visual analogue scale where the endpoints are labelled 'Best imaginable health state' and 'Worst imaginable health state'. This information can be used as a quantitative measure of health outcome as judged by the individual participants.¹⁴

The total participant and discectomy cohort raw EQ-5D-3L dimension scores and the EQ-VAS, were analysed (Figure 15). These indicate general improvement of the participants in the ASR across all domains.

Figure 15: EQ-5D-3L scores for each domain for all participants and discectomy only participants at pre-op and 6-month post-op

MOBILITY



SELF-CARE SCORE

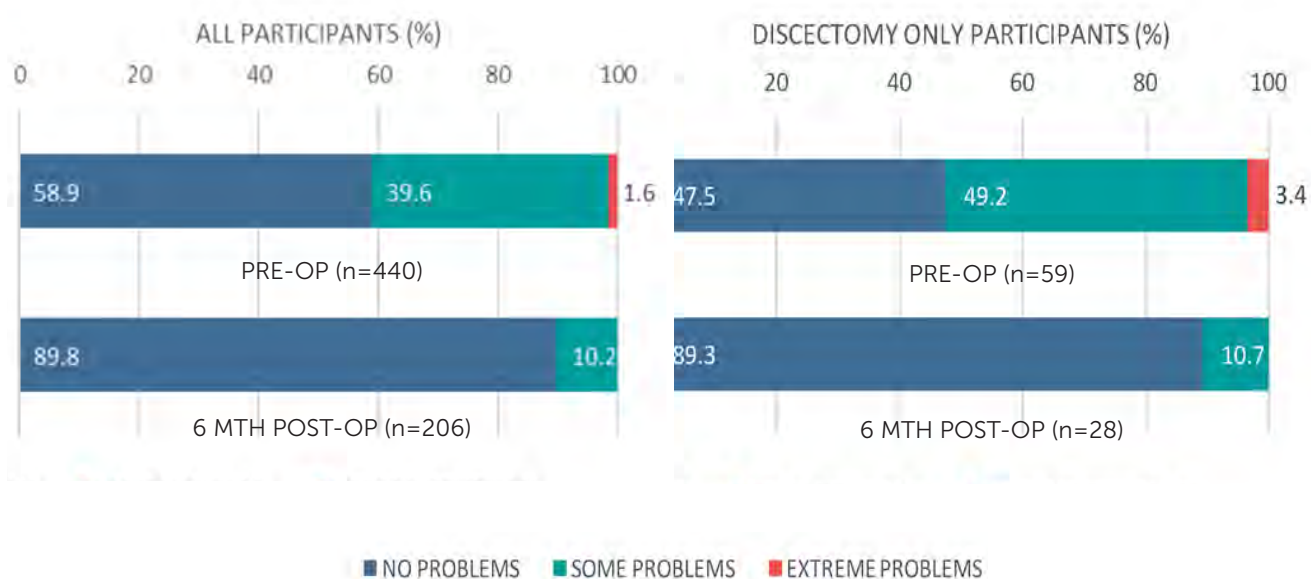


Figure 15: Continued

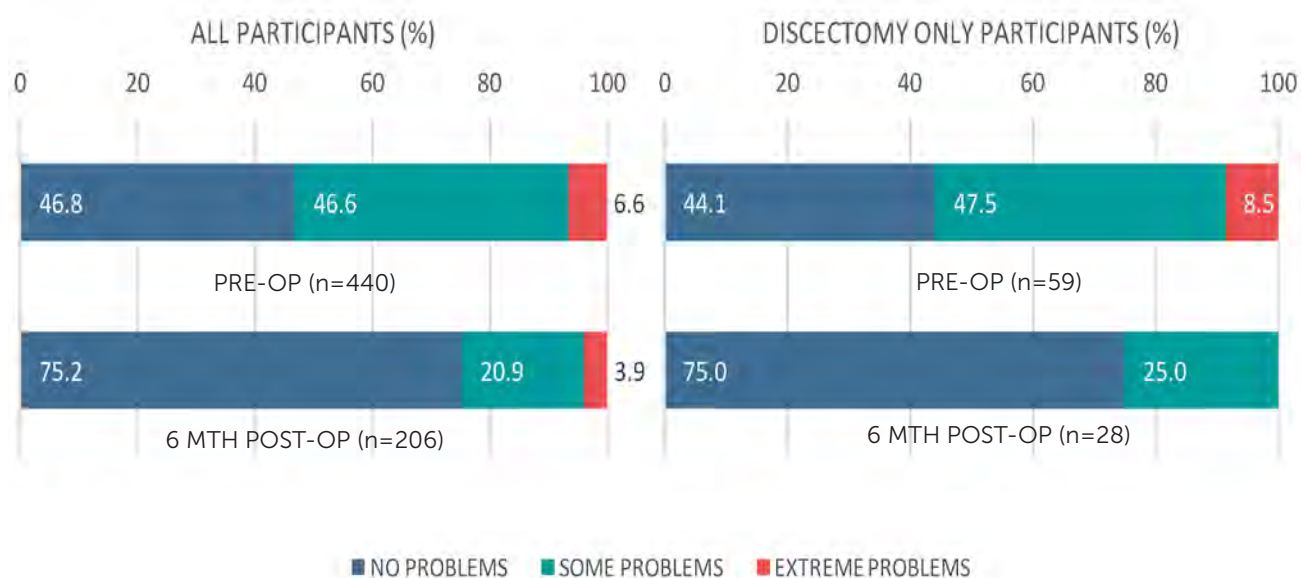
USUAL ACTIVITY SCORE



PAIN/DISCOMFORT SCORE



ANXIETY/DEPRESSION SCORE



As shown in Figure 16 to Figure 19, the shift to the right in the EQ-VAS indicates an improvement of participant perception of their general health status. Both groups showed improvement in their general perception of their health at 6 months post operatively.

Figure 16: EQ-VAS Score at pre-op: All Patients (n = 440)

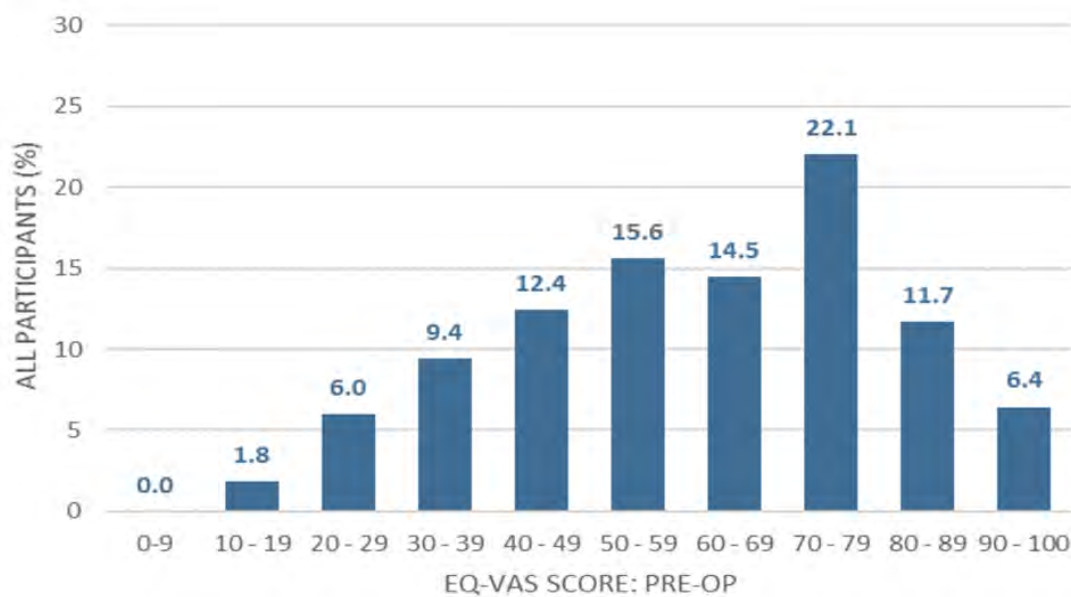


Figure 17: EQ-VAS Score at 6 Month post-op: All Patients (n = 202)

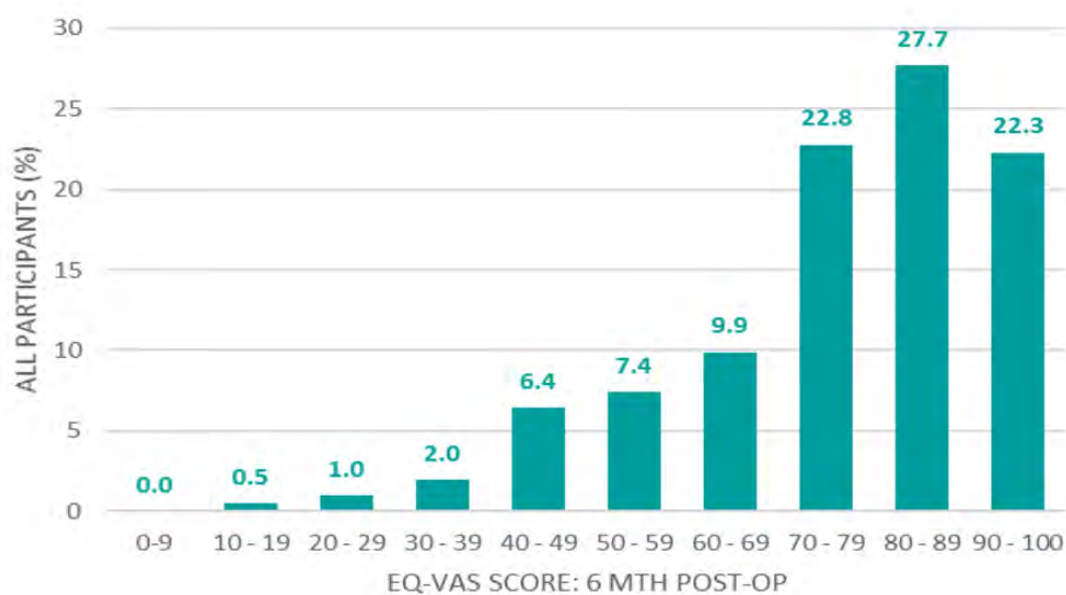


Figure 18: EQ-VAS Score at pre-op: Discectomy only (n = 58)

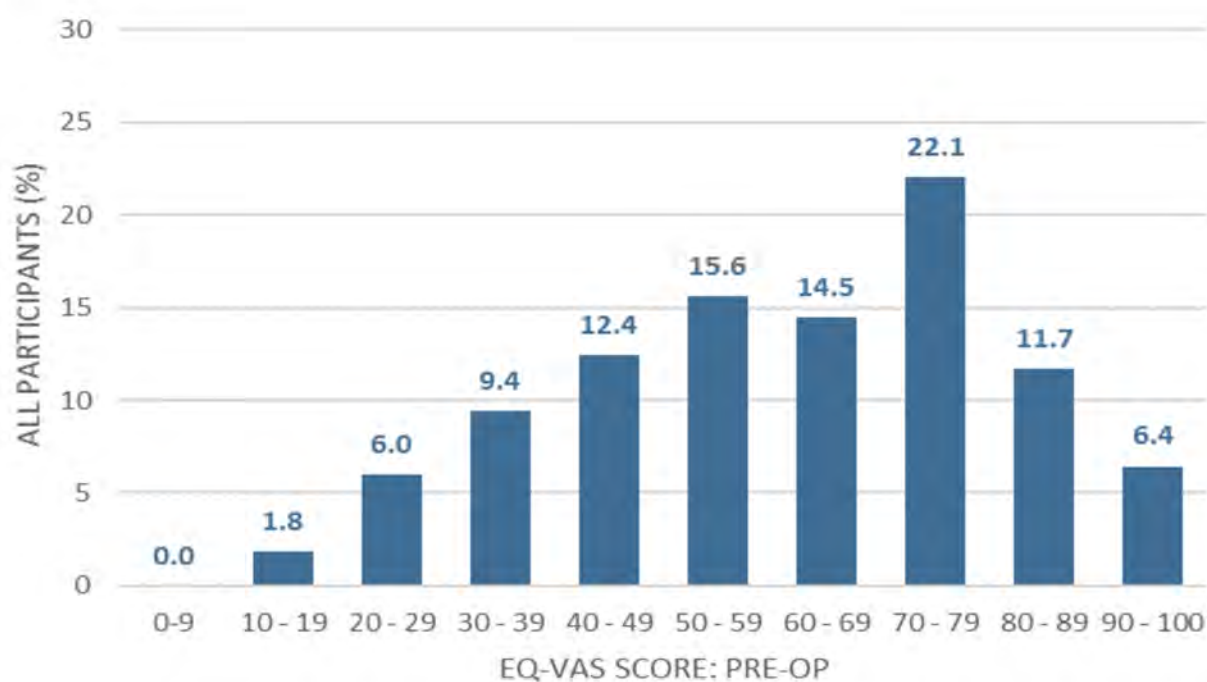
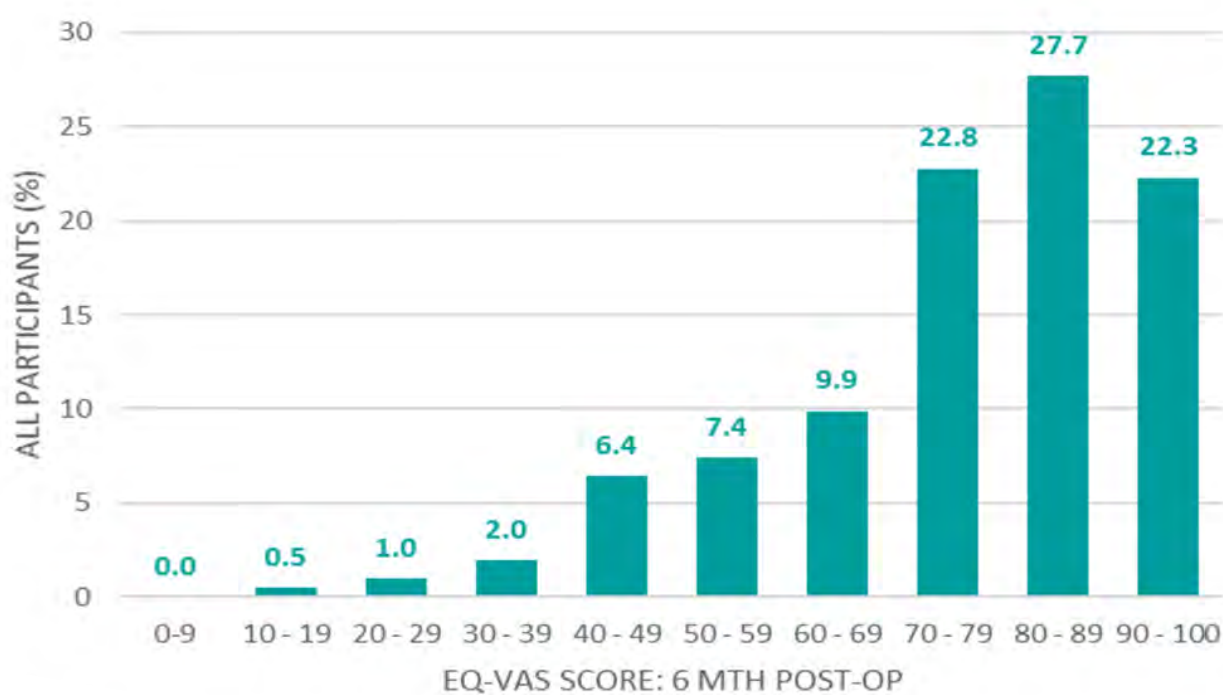


Figure 19: EQ-VAS Score at 6-month post-op: Discectomy only (n = 28)



Future Directions

Over the next 2 years the ASR will be completing the pilot study and will be assessing the feasibility and surgeon acceptability, stakeholder engagement, and feasibility of ongoing data collection and reporting. The long term aims of the registry following conclusion of the pilot and dependant on funding, is to roll out the registry nationally and to establish sustainable funding through industry and government channels.

Data Access

The ASR welcomes requests for access to data for data analyses from clinicians, researchers, governments, industry and others for the purposes related to health services and epidemiological research. Please contact the ASR for further information regarding the Data Access Policy and Procedure.

Registry Publications

Ahern S, Apos E, McNeil JJ, Cunningham J, Johnson M. Monitoring outcomes in spine surgery: rationale behind the Australian Spine Registry. ANZ J Surg. 2018 Oct;88(10): 950-951. doi: 10.1111/ans.14562.

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The Australian Spine Registry would not be possible without the leadership and the commitment of the Spine Society of Australia surgeons and their practice staff. I would like to also gratefully acknowledge funding by the registry's industry partners and BUPA. The registry would also not be possible without the input and active participation of our Steering Committee members.

Most importantly, thank you to our participating patients who generously share their information with us to improve the quality of the management of spine surgery in Australia.



A handwritten signature in dark ink, which appears to read 'Susannah Ahern'.

Associate Professor Susannah Ahern
Academic Lead, Australian Spine Registry
Head, Registry Sciences Unit, Monash University.

APPENDICES

Steering Committee Members

Mr Michael Johnson	Committee Chair, President Spine Society of Australia, Orthopaedic Spine Surgeon
Associate Professor Susannah Ahern	Head, Registry Science Unit, Monash University
Mr John Cunningham	Orthopaedic Spine Surgeon
Dr Rob Kuru	Orthopaedic Spine Surgeon
Associate Professor Kevin Seex	Neurosurgical Spine Surgeon
Dr Alex Koefman	Neurosurgeon
Professor John McNeil	Head of Department, Epidemiology and Preventative Medicine, Monash University
Associate Professor Ilana Ackerman	Associate Professor (Research), Clinical Epidemiology, Monash University
Mr Chris Dalton	Medical Director, BUPA

Registry Leads

Mr Michael Johnson	Clinical Lead
Associate Professor Susannah Ahern	Academic Lead

ASR Coordinating Centre, Monash University

Dr Esther Apos	Registry Coordinator
Ms Elysia Greenhill	Research Assistant
Mr Tom Ranger	Biostatistician

List of Participating Sites and Surgeons

VICTORIA

Michael Johnson	Epworth Richmond
Peter Turner	Epworth Richmond Royal Melbourne Hospital
John Cunningham	Epworth Richmond Royal Melbourne Hospital
Yi Yang	Epworth Richmond Royal Melbourne Hospital
Radek Kindl	Epworth Eastern Warringal Private

NEW SOUTH WALES

Rob Kuru	John Hunter Newcastle Private Nepean Public Hospital Lake Macquarie Hospital
Simon Abson	John Hunter Nepean Public Hospital Lake Macquarie Hospital
Kevin Seex	Macquarie University Hospital Nepean Private Hospital
Ralph Stanford	Prince of Wales Hospital Prince of Wales Private Hospital

TASMANIA

Alex Koefman	Calvary Private Hospital – Lenah Valley
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WESTERN AUSTRALIA

Peter Woodland	St John of God Subiaco
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