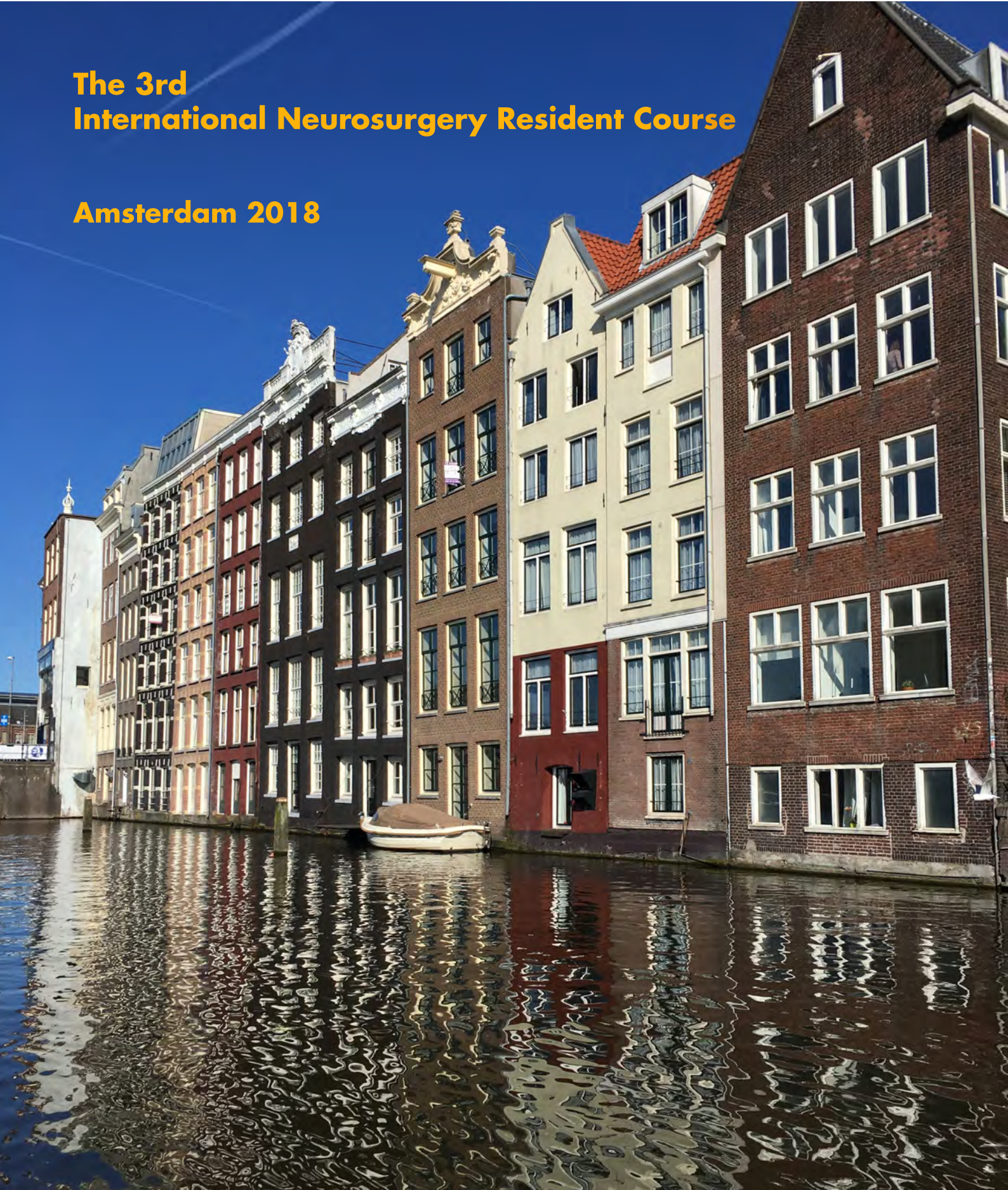


# The 3rd International Neurosurgery Resident Course

Amsterdam 2018



Also Available Online Via Webcast



**stryker**

**A course of the Neurosurgery Research Listserv organised in collaboration with the Department of Neurosurgery, Penn State University and endorsed by the Department of Neurosurgery, University of Malaga and the Foundation of the World Federation of Neurosurgical Societies (WFNS).**

**Sponsored by **

# Educate. Stimulate. Inspire.

## Patrons

**Robert E Harbaugh**, Penn State, Hershey

**Miguel Arraez**, University of Malaga, Malaga

**Laligam Sekhar**, University of Washington, Seattle

## Organisers

**G Narenthiran**, Charing Cross Hospital, London; Penn State, Hershey

**Robert E Harbaugh**, Penn State, Hershey

**George Jallo**, All Children's Hospital, Johns Hopkins, St Petersburg, Florida

**Michael Glantz**, Penn State, Hershey

**Sen Han**, University of Utrecht, Utrecht

**André Grotenhuis**, Radboud University, Nijmegen

## Directors

**Dr Robert Harbaugh** Biostatistics & Study design & Neurovascular

**Prof Raimund Firsching & Prof Tariq Khan** Head Injury

**Professor Miguel Arraez** Skull Base Surgery

**Professor Andreas Unterberg** Neuro-oncology

**Professor Mehmet Zileli** Spine

**Michael Glantz** Biostatistics

**George Jallo** Paediatric neurosurgery

# Welcome Message from the Honoured Faculty



## **Professor André Grotenhuis MD PhD**

Professor of Neurosurgery  
Radboud University, Nijmegen.  
Immediate Past-President, EANS

**W**elcome to the 3rd International Neurosurgery Resident Course. Its goal is to make neurosurgical education available to everyone in the world. It may sound idealistic, but this is precisely the mission. It is what motivates the work of Ganesaligan Narenthiran, in short Naren as we all know him – the founder of Neurosurgery ListServ, an internet forum that connects thousands of neurosurgeons globally. In this third course he has been able, again, to attract 76 internationally well-known neurosurgeons to come for one week to teach and interact with the participants. Everyone who has been part of the previous courses, participants and faculty alike, will admit that it both inspires the learning experience as well as the teaching.

Naren is driven by the belief that every neurosurgical resident or young neurosurgeon deserves a high-quality education and that such educational opportunity is a basic right. Regardless of where somebody is born, who his or her parents are, the color of the skin: he or she deserves a high-quality neurosurgical education because it is for the betterment of future patients. And personally I strongly believe that providing such educational opportunities is one of the most fundamental obligations my generation owes to the ones that follow.

We are witnessing an intersection of great challenge and great opportunity. At the moment, far too many neurosurgical

residents lack access to a high-quality education globally; still others are unable to achieve their full potential. Our training programs were designed in the 19th century and were more or less fit for the 20th century. But technology, certainly in this 21st century, continues to evolve at a dizzying pace bringing unique opportunities. But much too often, ideology and politics trump evidence and common sense, making it difficult to have honest conversations about the best ways to fix what is broken in international neurosurgical education. That is the challenge.

At the same time, we have tools available today that were unimaginable a generation ago, in the form of learning technologies and new insights into how the brain develops and functions, which together also could change the very nature of teaching and learning. Neurosurgical education has the full attention of the continental neurosurgical societies, like AANS, CNS, EANS, CAANS and AACNS as well as the WFNS. They recognize that proper neurosurgical education, preparing the neurosurgeon for a demanding task, is the defining issue of our time. And there is a fierce hunger among both trainees and faculty for reliable evidence about what works, for creative solutions to long-standing problems, but also for new strong leaders who can enact transformational change in global neurosurgical education. That is the opportunity. So I hope that all participants, and faculty, will see this INC as a great opportunity to interact and to initiate changes, but with opportunity comes responsibility. We must accept this responsibility and seize this moment. With your help, we will begin the next chapter in the life of international neurosurgical education that has been, and will continue to be, like no other. Together, we will learn to change the world of neurosurgical education. Thank you for your support by joining this INRC in Amsterdam. I hope you also will find time to enjoy this vibrant city, the capital of my home country, The Netherlands!

# Welcome Messages



## **Robert E. Harbaugh**

MD, FAANS, FACS, FAHA

Senior Vice President, Penn State Health Faculty Medical Group  
Distinguished Professor & Chair, Department of Neurosurgery  
Professor, Department of Engineering Science & Mechanics  
Penn State University, Milton S. Hershey Medical Center

Former President, AANS

Former President, Society of Neurological Surgeons (SNS)

It is my honor and pleasure to welcome you to the 2018 International Neurosurgery Resident Course. The Penn State Department of Neurosurgery is proud to support these innovative, low-cost resident education courses. My thanks to Stryker for their generous support, to the numerous faculty members who have given their time to organize and teach at these meetings and most of all to Ganesalingam Narenthiran, whose vision, organizational skills and boundless energy have made these courses possible. Welcome to Amsterdam!



## **Ganesalingam 'Naren' Narenthiran**

BSc(Hons) MB ChB MRCSE FEBNS FRCS(SN) CCT(UK)

Moderator-in-chief, Neurosurgery Research Listserv

Charing Cross Hospital, London Penn State University, Hershey

It is a pleasure and privilege to welcome you to the 3rd International Neurosurgery Resident Course - Amsterdam 2018! Building upon the success of previous courses in Berlin and Malaga, this third course in Amsterdam promises to be a landmark neurosurgical event!

The faculty include over 75 Internationally renowned neurosurgeons from five continents. It is a dynamic course for modern neurosurgery residents and future leaders, with coverage of the curriculum, lectures from iconic leaders and pioneers of neurosurgery, workshops, mock MCQ and mock viva exams, careers advice and plenty of social events to network and make new friends with faculty and delegates from around the world! Furthermore, those who are not able to be at the course can follow the proceedings through the web-cast (free) sponsored by Stryker.

Thank you to the leadership and support of Dr Robert Harbaugh and Professor Miguel Arreaz and fellow dynamic organisers Dr George Jallo, Dr Michael Glantz, Dr Sen Han and Prof Andre Grotenhuis for making this course possible! Thank you also to the generous sponsorship from Stryker MedEd which has allowed the course-fee to be kept low!

Thank you to the faculty members for taking time-out from the clinical busy schedule to teach, stimulate and inspire the next generation of neurosurgeons.

Wishing both the delegates and faculty an enterprising, stimulating and enjoyable time in Amsterdam!

# Honoured Faculty



## Professor André Grotenhuis MD PhD

Professor of Neurosurgery, Radboud University, Nijmegen.  
Immediate Past-President, EANS

### Education:

1979 Certification as M.D. from the Catholic University Nijmegen  
1979-1981 Military duty as a medical doctor in the Dutch Army  
1981-1987 Neurosurgical training at the Akademisches Lehrkrankenhaus Städtische Kliniken Duisburg, Germany (Prof. Bettag)  
1987 board certification as neurosurgeon both in Germany and in The Netherlands 1987-1995 Assistant professor at the University Hospital St. Radboud Nijmegen 1991-2011 Consultant neurosurgeon at the Rijnstate Hospital Arnhem  
1995-1999 Associate professor and senior lecturer at the University Hospital St. Radboud  
1999-2010 Chairman of the Department of Neurosurgery, Radboud University Nijmegen Medical Centre  
2001-present Full clinical professor at the Radboud University Nijmegen Medical Centre  
1999-present Training and Fellowship Program Director, Radboud University Nijmegen Medical Centre

### Professional Affiliations:

2015-2017 President of the EANS  
2011-2015 Secretary of the EANS  
2007-2011 Chairman Postgraduate Education Committee of the EANS  
2001-2017 Member of the Accreditation Committee NVvN (Netherlands Society of Neurosurgery)  
2014-2017 Member of the Board of Directors of the AANS  
2013-present Executive Board Member Asian Congress of Neurological Surgeons 2007-2017 Member of the Executive Board of IFNE (International Federation of NeuroEndoscopy)  
2009-present Delegate for The Netherlands at the WFNS (World Federation of Neuro-surgical Societies)  
2004-2013 Delegate for The Netherlands in the EANS Training Committee  
2013-present Member of the Neuroendoscopy Committee of the WFNS  
2011-present Member of the NVMSR (Dutch Society for Medical Legal Expertise) 2009-present Member of the Regionaal Tuchtcollege Zwolle (Medical Correctional Board)  
2015-present Associate Editor "Acta Neurochirurgica"  
2014-present Associate Editor "Innovative Neurosurgery"  
2012-present Member Editorial Board "Surgical Neurology International"  
Reviewer for several journals ( Acta Neurochirurgica, Neurosurgery, Journal of Neurosurgery, Central European Neurosurgery, Clinical Neurology & Neurosurgery, World Neurosurgery, Neurosurgical Review, Neurological Science, Minimally Invasive Surgery, Cerebrospinal Fluid Research, Netherlands Journal of Medicine)

### Honors & Awards:

Recipient of a Lifetime Achievement of the Government of Jalisco, Mexico, 2011 Recipient of the AANS 2017 International Lifetime Recognition Award  
Honorary Member of 14 international neurosurgical societies  
Elected Member of the World Academy of Neurological Surgery and the Academia Eurasiana Neurochirurgica

### Academic interests:

Minimally invasive and endoscopic techniques; skull base surgery; pituitary surgery; vascular neurosurgery; deep-seated and intraventricular tumors; cerebrospinal fluid dynamics; neurosurgical education.

# International Faculty List

<b>First Name</b>	<b>Surname</b>	<b>Country</b>
Frank	Van Calenberg	Belgium
Benedicto Oscar	Colli	Brazil
Rolando	Del Maestro	Canada
Marianne	Juhler	Denmark
Hugues	Duffau	France
Francesco	Signorelli	France
Raimund	Firsching	Germany
Venelin	Gerganov	Germany
Vince	Giles	Germany
Hannes	Haberl	Germany
Christine	Jungk	Germany
Maximillian	Mehdorn	Germany
Andreas	Unterberg	Germany
Wolfgang	Wagner	Germany
Deepak	Gupta	India
Komal	Prasad	India
Nevo	Margalit	Israel
Anna	Mazzeo	Italy
Gianpiero	Tamburrini	Italy
Takamitsu	Fujimaki	Japan
Mahjouba	Boutarbouch	Morocco
Aneela	Darbar	Pakistan
Tariq	Khan	Pakistan
Salman	Sharif	Pakistan
Ammar	Ahmed	Saudi Arabia
Miguel	Arraez	Spain
Hans	Delye	The Netherlands
Dennis	Buis	The Netherlands
André	Grotenhuis	The Netherlands
Han	K Sen	The Netherlands
Eelco	Hoving	The Netherlands
Moyo	Kruyt	The Netherlands
Wilco	Peul	The Netherlands
Pajt	Robe	The Netherlands
Jan	van der Sprenkel	The Netherlands
Bart	van der Zwan	The Netherlands
Erik	van der Lindert	The Netherlands
Pim	van Ouwerkerk	The Netherlands
JJ	van Overbeeke	The Netherlands



<b>First Name</b>	<b>Surname</b>	<b>Country</b>
W Peter	Vandertop	The Netherlands
Peter	Wesseling	The Netherlands
Peter	Willems	The Netherlands
Peter	Woerdeman	The Netherlands
Ersin	Erdogan	Turkey
Ersoy	Kocabiçak	Turkey
Ugur	Ture	Turkey
Mehmet	Zileli	Turkey
Khalid	AlAli	UAE
Andreas	Demetriades	UK
Richard	Edwards	UK
Hussien	El-Maghraby	UK
Andrew	Kelso	UK
Conor	Mallucci	UK
Ravindra	Nannapanneni	UK
Ganesalingam	Narenthiran	UK
Kevin	O'Neill	UK
Ajay	Sinha	UK
Guirish	Solanki	UK
Nikolaos	Tzerakis	UK
Christian	Ulbricht	UK
Russell	Andrews	USA
Kathryn	Beauchamp	USA
Gene	Bolles	USA
Nicholas	Brandmeir	USA
Lawrence	Chin	USA
Kevin	Cockroft	USA
Richard	Fessler	USA
Michael	Glantz	USA
James	Goodrich	USA
Robert	Harbaugh	USA
George	Jallo	USA
Gordana	Juric-Sekhar	USA
Eylem	Ocal	USA
Harold	Rekate	USA
Elias	Rizk	USA
Laligam	Sekhar	USA
Krystal	Tomei	USA
Jerry	Tuite	USA
Jean-Paul	Wolinsky	USA

## Agenda Saturday 14th April

### Study design & Medical Statistics

Time	Event	Faculty
08:00	Welcome.	G Narenthiran
08:05	Introduction.	M Glantz
08:25	Practical Evidence-Based Medicine: An Introduction.	M Glantz
09:15	Hierarchy of Evidence - Observational Studies.	M Glantz
10:05	Hierarchy of Evidence - Interventional Studies.	E Rizk
10:50	Coffee	
11:00	Sample Size and Power.	M Glantz
11:45	Lunch	
12:30	Small Group Session: Calculating Sample Size and Interpreting Effects.	Faculty
13:30	Meta-Analysis.	M Glantz
14:15	Producing and Interpreting Practice Guidelines	M Glantz
15:15	Tea	
15:30	Small Group Session: Meta-Analysis and Randomized Controlled Trials.	Faculty
16:15	When RCTs Aren't an Option: Registry Trials.	R Harbaugh
16:50	Biostatistics Olympics.	Faculty
17:20	Close	

## Agenda Sunday 15th April

### Study design & Medical Statistics

08:00	Getting Acquainted with Random Error - A Demonstration and Discussion.	M Glantz
08:20	Small Group Session: Critical Appraisal of Journal Articles.	Faculty
09:20	Practical Statistics: Choosing the Right Test.	M Glantz
10:20	Break	
10:35	Diagnostic Studies.	Brandmeir
11:35	Small Group Session: Diagnostic Tests, ROC Curves, and the Kappa Statistic.	Faculty
12:25	Lunch	
13:25	Regression: Linear, Logistic, and Time-to-Event Analyses.	M Glantz
14:25	Small Group Session: Regression Analyses.	Faculty
15:15	Break	
15:30	Shark Tank.	All
17:30	Close	

## Agenda Monday 16th April

### Vascular, Peripheral, Head Injuries

Time	Event	Faculty
07:30	On FEBNS and FRCS(SN) Exams.	G Narenthiran
08:00	Aneurysmal subarachnoid haemorrhage.	K Cockroft
08:45	Unruptured aneurysms.	R Harbaugh
09:30	AVM.	U Ture
10:15	Coffee	
10:35	Cranial Dural AVF.	M Boutarbouch
10:50	Spinal Dural AVF.	K Cockroft
11:05	Principles of vascular anastomosis.	B van der Zwan
11:35	Bypass surgery: clinical cases.	B van der Zwan
12:05	Carotid artery stenosis.	R Harbaugh
12:35	Cavernomas.	F Signorelli
13:00	Lunch	
13:45	Management of Intracerebral haematomas.	F Signorelli
14:05	Management of Ischaemic Stroke.	A Unterberg
14:30	Workshop	
16:00	Carpal Tunnel Syndrome.	G Narenthiran
16:15	Ulnar nerve entrapment.	E Rizk
16:35	ETV – what residents need to know?	E Ocal
16:50	Classification of Head Injuries,	R Firsching
17:20	Assessing paediatric patients with head injuries.	D Buis
17:35	Decompressive craniectomy,	T Khan
17:50	Chronic Subdural Haematoma,	K Beauchamp,
18:05	Ballistic head injuries	G Bolles
18:20	Close	

## Agenda Tuesday 17th April

### Skull Base, Neurosurgery

07:30	Multiple Choice Questions	G Narenthiran
08:00	Principles of skull base surgery.	JJ van Overbeeke
08:20	Orbitozygomatic and Dolenc approaches.	B O Colli
08:40	Olfactory groove meningiomas.	A Darbar
09:00	Sphenoid wing meningiomas.	V Gerganov
09:20	Acoustic Neuroma.	JW B van der Sprenkel
09:40	Cerebello-pontine angle lesions.	N Margalit
10:00	Coffee	

Time	Event	Faculty
10:20	Tentorial meningiomas.	R Firsching
10:40	Foramen magnum meningiomas.	BO Colli
11:00	Petrous Apex meningiomas.	M Arraez
11:20	Endoscopic endonasal anatomy.	K Prasad
11:40	Planum sphenoidale meningiomas: open vs endoscopic.	A Grotenhuis
12:00	Pituitary adenomas.	A Grotenhuis
12:30	Craniopharyngiomas.	A Grotenhuis
13:00	Lunch	
13:50	Chordomas and chondrosarcomas.	M Arraez
14:10	Radiosurgery for skull base lesions.	L Chin
14:30	MVD for trigeminal neuralgia and hemifacial spasm.	T Fujimaki
15:00	Workshops	
16:50	Cranial nerve examination: II, III, IV, VI.	A Kelso
17:20	Classification of Epilepsy & management of status epilepticus and tumour related seizures.	A Kelso
17:35	History taking on neurology/ neurosurgery mimics.	A Kelso
17:50	Complex cases in skull base surgery.	L Sekhar
18:50	Close	

## Agenda Wednesday 18th April

### Neuro-oncology, Hydrocephalus, Function

07:30	Multiple Choice Questions	G Narenthiran
08:00	WHO Classification of gliomas.	G Juric-Sekhar
08:30	Intraop Ultrasound.	V Giles
08:50	Intraop MRI.	A Unterberg
09:10	Decision making in neuro-oncology.	K O'Neill
09:40	Brain Metastases.	C Jungk
10:10	Coffee	
10:30	Virtual reality training in neuro- oncology.	R Del Maestro
11:00	High-grade gliomas.	C Jungk
11:30	Adult primary posterior fossa & pineal tumours.	P Robe
12:00	Low grade gliomas.	H Duffau
12:30	Insular tumours.	H Duffau
13:00	Lunch	

Time	Event	Faculty
13:50	Colloid cysts.	A Grotenhuis
14:20	Meningiomas.	H El-Maghraby
14:50	Workshops	
16:20	Shunt hardware.	P Woerdeman
16:35	Chiari.	H Rekate
16:55	Syrinx.	H Rekate
17:05	Normal Pressure Hydrocephalus.	R Andrews
17:20	Idiopathic intracranial hypertension.	R Andrews
15:35	DBS for Parkinsonism.	M Mehdorn
17:50	DBS for other movement disorders.	M Mehdorn
18:05	DBS application for psychiatric conditions,	E Kocabiçak
18:20	Temporal lobectomy.	E Erdogan
18:35	Management of Giant aneurysms	L Sekhar
19.30	Close	

## Agenda Thursday 19th April

### Spine

07:30	Primary spinal tumours.	JP Wolinsky
08:00	Intradural tumour.	JP Wolinsky
08:15	Metastatic spinal disease.	JP Wolinsky
08:45	Lumbar canal stenosis.	R Nanapanni
09:00	Spinal cord injury.	N Tzerakis
09:15	Thoracic spine fractures.	S Sharif
09:30	Basilar invagination.	K Prasad
09:45	Coffee	
10:05	Atlas and axis fracture.	A Demetriades
10:25	Thoracic spine fractures.	S Sharif
10:40	Management of lumbar spine fractures.	H El-Maghraby
10:55	MIS in lumbar spine fractures.	H El-Maghraby
11:10	Cauda equina syndrome.	A Demetriades
11:30	Metastatic spinal cord compression.	C Ulbricht
12:00	Cauda equina syndrome.	A Demetriades
11:30	Metastatic spinal cord compression.	C Ulbricht
12:00	Endoscopic spine surgery.	R Fessler
13:00	Lunch	
13:45	Cervical radiculopathy	M Zileli
14:00	Cervical myelopathy,	M Zieli
14:15	Guides lines on management of low back pain.	C Ulbricht
14:45	Workshop	

Time	Event	Faculty
16:30	Essential spinal biomechanics,	M Kruyt
16:45	Spinal infection and Discitis,	K AlAli
17:00	Terminal lipomas,	K Tomei
17:15	Spinal cord stimulators,	G Narenthiran
17:30	Principles of deformity Correction.	M Zileli
18:00	Brainstem death and organ donation	A Mazzeo
18:15	Principles of ethics.	A Ammar
18:45	Close	

## Agenda Friday 20th April

### Paediatrics

08:00	New WHO Classification of Pediatric CNS Tumors.	P Wesseling
09:00	Spinal Cord Tumors.	WP VanderTop
09:20	Germ Cell Tumors.	J Tuite
09:40	Ependymomas.	G Solanki
10:00	Sellar Tumors of Childhood (Pituitary, Rathkes Cleft).	E vanLindert
10:20	Coffee	
11:00	Craniopharyngiomas.	E W Hoving
11:20	Intraventricular Tumors.	E vanLindert
11:40	Medulloblastoma	E W Hoving
12:00	Lunch	
14:00	Surgical Approaches to Optic Pathway Tumors.	C Mallucci
14:20	Pineal Tumors.	C Mallucci
14:40	Chiari Malformations.	G Jallo
15:00	Intraop neurophysiology monitoring.	G Jallo
15:20	Bone Tumors of Children (Fibrous Dysplasia, dermoids, LCH).	K Tomei
15:40	Neurosurgical Management of Spasticity in Children.	P vanOuwkerk
16:00	Open Discussions	
17:00	Close	

## Agenda Saturday 21st April

### Paediatrics

Time	Event	Faculty
08:00	What is the Normal ICP in Children.	H Rekate
08:20	Controversies in Tethered Cords (fatty filum and appendages).	G Tamburrini
08:40	Controversies in the Management of Spinal Lipomas.	H Haberl
09:00	Debate: Myelomeningocele Prenatal vs postnatal	F Calenbergh J Tuite
09:40	Syringomyelia.	H Rekate
10:00	Coffee	
10:40	Paediatric cranioplasties.	JT Goodrich
11:00	Paediatric vascular conditions I:	P Willems
11:20	Moya Moya Disease.	A Ammar
11:40	Management of Vascular Malformations;	
12:00	Lunch	
14:00	Observations of CSF dynamics after ETV.	A Grotenhuis
14:20	Debate: endoscopy vs Shunting (ETC+CPC vs VP shunts).	H Rekate & A Grotenhuis
15:20	Debate: Complex hydrocephalus (trapped 4th ventricle).	H Rekate & W Wagner
16:00	Debate: Brainstem Biospy	G Solanki & R Edwards
16:40	Debate: Single Suture Craniosynostosis (open late vs endoscopic/early open suturectomy).	J Goodrich & A Sinha
17:30	Close	

# Neurosurgery ListSERV

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