CURRICULUM VITAE [Updated November 2019]

Rune Aaslid

Born 1943 in Volda, Norway

Education and Degrees

1988: **Privatdozent (PD)** in Neurosurgical Research, University of Berne, Berne, Switzerland.

1975: **Dr Philos (PhD)** in Cardiovascular Physiology, Medical Faculty, University of Oslo, Oslo, Norway.

1968: **Sivilingenieur (MS)** in Engineering Cybernetics and Electrical Engineering, The Norwegian Institute of Technology (NTH), Trondheim, Norway.

Career Positions

1998 – present: Director of Research, Hemodynamics AG, Berne, Switzerland. **http://transcranial.com/**

1989 – present: Privatdozent, (Affiliate Associate Professor), Department of Neurosurgery and Neurovascular Laboratory, University of Berne, Berne, Switzerland.

1991 – present: Affiliate Associate Professor of Neurosurgical Research, University of Washington, Seattle, Washington, USA.

1988 – 91: Director of Neurosurgical Research, Inselspital, University of Berne, Berne, Switzerland.

1985 – 87: Director of Cardiovascular Research, Institute of Applied Physiology and Medicine (IAPM) Seattle, Washington, USA.

1983 – 84: Senior Research Fellow, Department of Neurosurgery, Rikshospitalet, Oslo, Norway.

1981 – 83: Senior Research Fellow (Wissenschaftlicher Beamter), Department of Neurosurgery, Inselspital, University of Berne, Berne, Switzerland

1976 – 79: Adjunct Associate Professor of Biocybernetics, Division of Engineering Cybernetics, Department of Electrical Engineering, the Norwegian Institute of Technology (NTH), Trondheim, Norway.

1969 – 75: Research assistant, Institute of Surgical Research, Rikshospitalet, University of Oslo, Oslo, Norway; and Division of Engineering Cybernetics, Department of Electrical Engineering, the Norwegian Institute of Technology (NTH), Trondheim, Norway.

Some Research Milestones

1998-2012: Developed the first transcranial Doppler instrument capable of portable ambulatory monitoring for cerebral emboli. [78, 80, 84].

1998-2019: Created the first interactive computer program for teaching cerebral hemodynamics and the principles and clinical use of transcranial Doppler. The ebook format integrates educational text with a comprehensive model of the cerebral circulation and a realistic rendering of pulsed Doppler and other instruments. Three-D simulation of anatomy and

ultrasound insonation is also included in the newest Version 3.0 at **http://transcranial.com/edu/**

1989-2007: Introduced and developed the use of transcranial Doppler for quantitative assessment of dynamic cerebral autoregulation. [42, 49, 60, 61, 63, 65, 66, 68, 83].

1987: **Introduced functional transcranial Doppler** for study and quantification of evoked flow responses and the dynamic relationship between brain function and blood flow. [38]

1984: **Introduced cerebral vasospasm evaluation by transcranial Doppler.** [18, 19, 20, 26, 69, 70] *Publication [18] is ranked 43rd among the most cited in neurosurgical journals according to a recent paper (J Neurosurg 112:**223–232, 2010**)*

1982: **Developed and introduced the transcranial Doppler method** [17]. *This publication is the second most cited in neurosurgical journals (J Neurosurg 112:**223–232, 2010**)*

1981: **Invented and evaluated a new noninvasive blood pressure measurement method**. [15] This technique permits recording of instantaneous and mean blood pressure with accuracy and resolution comparable to invasive methods.

1976: Cooperated on the first study describing a method for **noninvasive assessment of pressure gradient in mitral valve stenosis**. [5] Dr. Holen was the main contributor to this achievement.

1975: Described a new and accurate method of quantifying the **efficiency of prosthetic heart valves**. [3]

Editorial Appointments

1990 – 92: Member of the Editorial Board of **Stroke.**

1989 – present: Member of the Editorial Board of **Neurosonology.**

1987 – present: Ad Hoc reviewer for **Stroke** and various other journals.

Other Editorial

1999: Coeditor, **Neurosurgical management of aneurysmal subarachnoid haemorrhage** [69, 70]

1992: Coeditor, **Transcranial Doppler** [53]

1986: Editor, first book on **Transcranial Doppler Sonography** [28-30]

Educational Software

2019: Aaslid R**: TCD Simulator 3.0 – 3.2**, Hemodynamics **AG**, Berne 2019. http://transcranial.com/edu/index.html

2008: Aaslid R**: TCD Simulator 2.0 - 2.3**, Hemodynamics **AG**, Berne 2008. http://transcranial.com/edu/download.html

1999: Aaslid R**: TCD Simulator 1.0**, Hemodynamics **AG**, Berne 1999.

Publications in Peer Reviewed Journals and Books

1. Aaslid R, Brubakk AO: [Dynamic pressure-flow relationship of the human aorta]. Ver Dtsch Ges Kreislaufforschg 1973; 40:154-158

2. Aaslid R: Simulation of the individual cardiovascular system: A pilot study. PhD thesis, Medical Faculty, University of Oslo and Report No. 74-51-W Division of Engineering Cybernetics, The Norwegian Institute of Technology 1974

3. Aaslid R, Levang O, Froysaker T, Skagseth E, Hall KV: "In situ" evaluation of the aortic pivoting disc valve prosthesis. Scand J Thor Cardiovasc Surg 1975; 9:81-84

4. Nornes H, Magnes B, Aaslid R: Observations on intracranial pressure plateau waves, in Lundberg N, Ponten U, Brock M: Intracranial Pressure. Springer Verlag, Berlin-Heidelberg-New York 1975

5. Holen J, Aaslid R, Landmark K, Simonsen S: Determination of pressure gradient in mitral stenosis with a noninvasive ultrasound Doppler technique. Acta Med Scand 1976; 199:455-460

6. Aaslid R, DiStefano III J, Balchen JG: Modeling of the hormonal state of fishes. Report STF48 A76081, SINTEF, Trondheim 1976

7. Aaslid R: [Biocybernetics, textbook in Norwegian] Report no 75-110X, Division of Engineering Cybernetics, University of Trondheim, Trondheim 1975

8. Holen J, Aaslid R, Landmark K, Simonsen S, Ostrem T: Determination of the effective orifice area in mitral stenosis from noninvasive ultrasound Doppler data and mitral flow rate. Acta Med Scand 1977; 201:83-88

9. Nornes H, Aaslid R, Lindegaard KF: Intracranial pulse pressure dynamics in patients with intracranial hypertension. Acta Neurochir 1977; 38:177-186

10. Brubakk AO, Aaslid R: A model approach to studying cardiovascular function in man, in Perkins WJ: Biomedical Computing. Pitman Medical UK, 1977

11. Brubakk AO, Aaslid R: Use of a model for simulating individual aortic dynamics in man. Med Biol Eng Comput 1978; 16:231-242

12. Piene H, Aaslid R, Hansen M, Sund T: Simple system for analog data transmission from the physiological research laboratory to a digital computer. Ann Biom Eng 1978; 6:161-166

13. Sudmann E, Aaslid R: A synchronization control unit for super 8 sound recording, editing and sound transfer to magnetic-striped film. Society of Motion Picture and Television Engineers Journal 1978; 87:158-162

14. Giltvedt J, Aaslid R: Timesaving method for segmental pressure measurements. Med Biol End Comput 1981; 19:775-776

15. Aaslid R, Brubakk AO: Accuracy of an ultrasound Doppler servo method for noninvasive determination of instantaneous and mean arterial blood pressure. Circulation 1981; 64:753-759

16. Hetland O, Warhuus K, Gierckskey KE, Aaslid R, Prydz H: Toxicity of phospholipase C in rabbits. Scand J Clin Lab Invest 1982; 42:239-244

17. Aaslid R, Markwalder T-M, Nornes H: Noninvasive transcranial Doppler ultrasound recording of flow velocity in basal cerebral arteries. J Neurosurg 1982; 57:769-774

18. Aaslid R, Huber P, Nornes H: Evaluation of cerebrovascular spasm with transcranial Doppler ultrasound. J Neurosurg 1984; 60:37-41

19. Aaslid R, Nornes H: Musical Murmurs in human cerebral arteries after subarachnoid hemorrhage. J Neurosurg 1984; 60:32-36

20. Aaslid R, Huber P, Nornes H: Noninvasive transcranial Doppler ultrasound recording in basal cerebral arteries - A new approach to evaluation of cerebrovascular spasm, in Voth D, Glee P (eds): Cerebral Vasospasm. Walter de Gruyter, Berlin-New York ,1984

21. Markwalder T-M, Grolimund P, Seiler RW, Roth F, Aaslid R: Dependency of blood velocity in the middle cerebral artery on en-tidal carbon dioxide partial pressure - A transcranial ultrasound Doppler study. J Cereb Blood Flow Metab 1984; 4:368-372

22. Lindegaard K-F, Bakke SJ, Grolimund P, Aaslid R, Huber P, Nornes H: Carotid artery disease: Assessment of intracranial hemodynamic pattern by noninvasive transcranial Doppler. J Neurosurg 1985; 63:890-898

23. Lundar T, Lindegaard K-F, Froysaker T, Aaslid R, Wiberg J, Nornes H: Cerebral perfusion during nonpulsatile cardiopulmonary bypass. Ann Thorac Surg 1985; 40:144-150

24. Lundar T, Lindegaard K-F, Froysaker T, Aaslid R, Wiberg J, Nornes H: Dissociation between cerebral autoregulation and CO2 reactivity during nonpulsatile cardiopulmonary bypass. Ann Thorac Surg 1986; 40:582-588

25. Seiler RW, Aaslid R, Grolimund P: Correlation of the middle cerebral artery flow velocity with the clinical course and CT-visualized subarachnoid blood in patients after aneurysm surgery, in Auer LM (ed): Timing of aneurysm surgery. Walter de Gruyter, Berlin-New York, 1985

26. Aaslid R, Huber P, Nornes H: A transcranial Doppler method in the evaluation of cerebrovascular spasm. Neuroradiology 1986; 28:11-16

27. Seiler RW, Grolimund P, Aaslid R, Huber P, Nornes H: Cerebral vasospasm evaluated by transcranial ultrasound correlated with clinical grade and CT-visualized subarachnoid hemorrhage. J Neurosurg 1986; 64:594-600

28. Aaslid R: Transcranial Doppler examination techniques, in Aaslid R (ed): Transcranial Doppler sonography, Springer, Vienna-New York, 1986

29. Aaslid R: The Doppler principle applied to measurement of blood flow velocity in cerebral arteries, in Aaslid R (ed): Transcranial Doppler sonography, Springer, Vienna-New York, 1986

30. Aaslid R, Lindegaard K-F: Cerebral Hemodynamics, in Aaslid R (ed): Transcranial Doppler sonography, Springer, Vienna-New York, 1986

31. Lindegaard K-F, Aaslid R, Nornes H: Cerebral arteriovenous malformations, in Aaslid R (ed): Transcranial Doppler sonography, Springer, Vienna-New York, 1986

32. Seiler RW, Aaslid R: Transcranial Doppler for evaluation of cerebral vasospasm, in Aaslid R (ed): Transcranial Doppler sonography, Springer, Vienna-New York, 1986

33. Aaslid R, Lundar T, Lindegaard K-F, Nornes H: Estimation of cerebral perfusion pressure from arterial blood pressure and transcranial Doppler recordings, in Miller JD et al (eds): Intracranial Pressure VI. Springer-Verlag, Berlin-Heidelberg-New York, 1986, pp226-229

34. Lindegaard K-F, Grolimund P, Aaslid R, Nornes H: Evaluation of cerebral AVM's using transcranial Doppler ultrasound. J Neurosurg 1986; 65:335-344

35. Lindegaard K-F, Bakke SJ, Aaslid R, Nornes H: Doppler diagnosis of intracranial artery occlusive disorders. J Neurol Neruosurg Psychiat 1986; 47:510-518

36. Aaslid R: [Future possibilities in transcranial Doppler sonography - in German], in Widder B (ed): Transcranielle Doppler-Sonographie bei zerebrovascularen Erkrankungen. Springer-Verlag, New York-Berlin-Heidelberg, pp 25-29, 1987

37. Aaslid R: Transcranial Doppler diagnosis, in Spencer MP (ed): Ultrasonic diagnosis of cerebrovascular disease. Martinus Nijhoff Publishers, Dordrech, 1987, pp 227-240

38. Aaslid R: Visually evoked dynamic blood flow response of the human cerebral circulation. Stroke 1987; 18:771-775

39. Grolimund P, Seiler RW, Aaslid R, Huber P, Zurbruegg M: Evaluation of cerebrovascular disease by combined extracranial and transcranial Doppler sonography: Experience in 1039 patients. Stroke 1987; 18:1018-1024

40. Lindegaard K-F, Lundar T, Wiberg J, Sjoberg D, Aaslid R, Nornes H: Variations in middle cerebral artery blood flow investigated with noninvasive transcranial blood velocity measurements. Stroke 1987; 18:1024-1030

41. Adams RJ, Aaslid R, el Gammal T, Nichols FT, McKie V: Detection of cerebral vasculopathy in sickle cell disease using transcranial Doppler ultrasonography and magnetic resonance imaging. Case report, Stroke 1988; 19:518-520

42. Aaslid R, Lindegaard K-F, Sorteberg W, Nornes H: Cerebral autoregulation dynamics in humans. Stroke 1989; 20:45-52

43. Steiger HJ, Aaslid R, Keller S, Reulen HJ: Strength, elasticity and viscoelastic properties of cerebral aneurysms. Heart Vessels 1989; 5:41-46

44. Steiger HJ, Aaslid R, Keller S, Reulen HJ: Growth of aneurysms can be understood as passive yield to blood pressure. An experimental study. Acta Neurochir (Wien) 1989; 100:74-78

45. Augustyniak E, Swietliczko I, Aaslid R: [Evaluation of blood flow velocity and pulsation curves in the posterior ciliary arteries in glaucoma - in Polish.] Klin Oczna 1989; 91:3-6

46. Adams RJ, Nichols FT, Aaslid R, McKie VC, McKie K, Carl E, Stephens S, Thompson WO, Milner P, Figueroa R: Cerebral vessel stenosis in sickle cell disease: Criteria for detection by transcranial Doppler. Am J Pediatric Hematol Oncol 1990; 12:277-282

47. Aaslid R, Groger U, Patlak CS, Fenstermacher JD, Huber P, Reulen HJ: Fluid flow rates in human peritumoural Oedema. Acta Neurochir Suppl (Wien) 1990; 51:152-154

48. Nornes H, Sorteberg W, Nakstad P, Bakke SJ, Aaslid R, Lindegaard K-F: Haemodynamic aspects of clinical cerebral angiography - concurrent two vessel monitoring using transcranial Doppler ultrasound. Acta Neurochir (Wien) 1990; 105:89-97

49. Aaslid R, Newell DW, Stooss R, Sorteberg W, Lindegaard K-F: Assessment of cerebral autoregulation dynamics from simultaneous arterial and venous transcranial Doppler recordings in humans. Stroke 1991;22:1148-1154

50. Aaslid R, Bondar, RL, Kassam MS, Stein F, Dunphy PT. Cerebral autoregulation in microgravity. Proceedings, Spacebound '91, Ottawa, ON. 1991; 224-227.

51. Sullivan PJ, Thirsk R, Goodman L, Ackles K, Pecaric M, Bondar R, Kassam MS, Aaslid R, Dunphy PT, Stein F. Evaluation of an experimental antigravity suit for astronauts. Proceedings, Seventh Conference on Astronautics, Canadian Aeronautics and Space Institute, Ottawa, ON. 1992; 54-58.

52. Aaslid R: Principles of transcranial Doppler measurements, in Olesen J (ed): Migraine and other headaches: the vascular mechanisms. New York: Raven Press 1991;253-259

53. Aaslid R: Cerebral hemodynamics, in Newell DW, Aaslid R eds. Transcranial Doppler. New York: Raven Press 1992; pp49-55

54. Newell DW, Aaslid R: Transcranial Doppler: clinical and experimental uses. Cerebrovasc Brain Metab Rev 1992; 4:122-143

55. Newell DW, Aaslid R, Stooss R, Reulen HJ: The relationship of blood flow velocity fluctuations to intracranial pressure B waves. J Neurosurg 1992; 76:415-421

56. Steiger HJ, Aaslid R, Stooss R: Dynamic computed tomographic imaging of regional cerebral blood flow and blood volume. A clinical pilot study. Stroke 1993; 24:591-597

57. Giller CA, Aaslid R: Estimates of pulse wave velocity and measurement of pulse transit time in the human cerebral circulation. Ultrasound Med Biol 1994; 20:101-105

58. Newell DW, Aaslid R, Lam A, Mayberg TS, Winn HR: Comparison of Flow and velocity during dynamic autoregulation testing in humans. Stroke 1994; 25:793-797

59. Steiger HJ, Aaslid R, Stooss R, Seiler RW: Transcranial Doppler monitoring in head injury: relations between type of injury, flow velocities, vasoreactivity, and outcome. Neurosurgery 1994; 34:79-85

60. Tiecks FP, Lam AM, Aaslid R, Newell DW: Comparison of static and dynamic autoregulation measurements. Stroke 1995; 26:1014-19

61. Strebel S, Lam AM, Matta B, Mayberg TS, Aaslid R, Newell DW: Dynamic and static autoregulation during Isoflurane, Desflurane and Propofol anesthesisa. Anesthesiology 1995; 83:66-76

62. Baumgartner RW, Mattle HP, Aaslid R: Transcranial color-coded duplex sonography, magnetic resonance angiography, and computed tomography angiography: methods, applications, advantages, and limitations. J Clin Ultrasound 1995; 23:89-111

63. Newell DW, Weber JP, Watson R, Aaslid R, Winn HR: Effect of transient moderate hyperventilation on dynamic cerebral autoregulation after severe head injury. Neurosurgery 1996; 35-43

64. Sturzenegger M, Newell DW, Aaslid R: Visually evoked blood flow response assessed by simultaneous two-channel transcranial Doppler using flow velocity averaging. Stroke 1996; 27:2256-2261

65. Newell DW, Aaslid R, Stooss R, Seiler RW, Reulen HJ: Evaluation of hemodynamic responses in head injury patients with transcranial Doppler monitoring. Acta Neurochir (Wien) 1997; 139:804-817

66. Junger EC, Newell DW, Grant GA, Avellino AM, Ghatan S, Douville CM, Lam AM, Aaslid R, Winn HR: Cerebral autoregulation following minor head injury. J Neurosurg 1997; 87:485-486

67. Seidel G, Beller KD, Aaslid R, Hummel RP, Thibaut U, Vidal-Langwasser M, Kukat B, Kaps M: The influence of different gases on acoustic properties of a spherosome-based ultrasound contrast agent (BY963). A transcranial Dopplersonography study. J Neuroimaging 1998; 8:83-87

68. Doering TJ, Aaslid R, Steuernagel B, Brix J, Niederstadt C, Breull A, Schneider B, Fischer GC: Cerebral autoregulation during whole-body hypothermia and hyperthermia stimulus. Am J Phys Med Rehabil 1999; 78:33-38

69. Aaslid R: Hemodynamics of cerebrovascular spasm. Acta Neurochir [Suppl] 1999;72: 47-57

70. Langmoen IA, Lundar T, Aaslid R, Reulen H-J eds. Neurosurgical management of aneurysmal subarachnoid haemorrhage. Acta Neurochir [Suppl 72] 1999

71. Aaslid R: Hemodynamics of cerebrovascular spasm. Acta Neurochir [Suppl 72] 1999;72:47-57

72. Newell DW, Eskridge JM, Aaslid R. Current indications and results of cerebral angioplasty. Acta Neurochir Suppl. 2001; 77:181-183

73. Aaslid R: Transcranial Doppler assessment of cerebral vasospasm. Eur J Ultrasound. 2002;16: 3-10

74. Vavilala MS, Newell DW, Junger E, Douville CM, Aaslid R, Rivara FP, Lam AM. Dynamic cerebral autoregulation in healthy adolescents. Acta Anaesthesiol Scand. 2002; 46:393-397.

75. Park CW, Sturzenegger M, Douville CM, Aaslid R, Newell DW. Autoregulatory response and CO2 reactivity of the basilar artery. Stroke.2003; 34:34-39.

76. Blaha M, Aaslid R, Douville CM, Correra R, Newell DW. Cerebral blood flow and dynamic cerebral autoregulation during ethanol intoxication and hypercapnia. J Clin Neurosci. 2003; 10:195-198.

77. Aaslid R, Lash SR, Bardy GH, Gild WH, Newell DW. Dynamic pressure--flow velocity relationships in the human cerebral circulation. Stroke. 2003; 34: 1645-1649.

78. Mackinnon AD, Aaslid R, Markus HS. Long-term ambulatory monitoring for cerebral emboli using transcranial Doppler ultrasound. Stroke. 2004;35:73-78

79. Aaslid R, Newell DW. Response: Limitations in Estimating Critical Closing Pressure by Noninvasive Blood Pressure Measurements. Stroke 2004; 35:e91-e92

80. Mackinnon AD, Aaslid R, Markus HS: Ambulatory transcranial Doppler cerebral embolic signal detection in symptomatic and asymptomatic carotid stenosis. Stroke 2005;36:1726-1730

81. Aaslid R: Cerebral autoregulation and vasomotor reactivity. In Baumgartner RW (ed): Handbook on neurovascular ultrasound. Front. Neurol. Neurosci, Basel, Karger 2006;21:1-13

82. Aaslid R, Blaha M, Sviri G, Douville CM, Newell DW. Asymmetric dynamic cerebral autoregulatory response to cyclic stimuli. Stroke 2007; 38:1465-69

83. Sviri GE, Aaslid R, Douville CM, Moore A, Newell DW. Time course for autoregulation recovery following severe traumatic brain injury. J Neurosurg. 2009; 111(4):695-700

84. Truijman MT, de Rotte AA, Aaslid R, van Dijk AC, Steinbuch J, Liem MI, Schreuder FH, van der Steen AF, Daemen MJ, van Oostenbrugge RJ, Wildberger JE, Nederkoorn PJ, Hendrikse J, van der Lugt A, Kooi ME, Mess WH. Intraplaque hemorrhage, fibrous cap status, and microembolic signals in symptomatic patients with mild to moderate carotid artery stenosis: the Plaque at RISK study. Stroke 2014; 45:3423-6