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## Shunt-treated childhood hydrocephalus - four decades on

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**Introduction:** Regarding the prognosis for hydrocephalic children, two game-changers materialized during the 1950s:

1. medical grade silicone rubber, and
2. workable implanted shunt valves. Cerebrospinal fluid shunting became Norwegian standard of care for pediatric hydrocephalus during the 1960s. We present here surgical and social outcomes and health related quality of life (HR-QoL) for children who, aged 0-15 years, received shunts during the calendar years 1967-1970.

**Results:** 128 children received shunts, with none lost to follow-up. The overall mortality rate 1, 2, 10, 20 and 40 years from first shunt insertion was 16%, 24%, 31%, 40% and 48% respectively. Most patients who died had intracranial tumor (n=22) or myelomeningocele (n=13), but at least 8% of the deaths were shunt-related (probable or late onset). Two patients died from acute shunt failure. During the last 20 years 12 patients died, one of whom from acute shunt failure. The majority of the children had graduated from normal school (67%) or from a school for the physically handicapped (20%). Their SF-36 scores were significantly below Norwegian norms in 6 of the 8 domains. The majority (56%) of the survivors reported independency in daily life, and 42% worked  $\geq 50\%$  paid employment.

**Conclusions:** One of two shunt-children from the late 1960s survived to attain adult middle age. Late mortality was low, but not negligible. Although middle-aged adults today, "shunt-children" will remain shunt-dependent: During the last 10 years, 21 patients have had a total of 41 shunt revisions. Patients shunted for childhood hydrocephalus require scheduled and life-long follow-up.

### Biography

Karl-Fredrik Lindegaard graduated from Oslo University Medical School (medicine) in 1971 completed his PhD in Oslo in 1987 and a master degree in health administration in 2002. He became a certified specialist in neurosurgery in 1985. Since 1999, he is professor of medicine (neurosurgery) to the University of Oslo and a senior surgeon at the Neurosurgical Department, Oslo University Hospital. In 2010, he was appointed honorary member of the European Society of Neurosonology and Hemodynamics. His publications include over 60 papers published in reputed international journals.

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