



Population outcomes of universal, risk factor and opportunistic screening for congenital hearing loss

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**Murdoch Childrens Research Institute and
The Royal Children's Hospital Centre for Community Child Health**

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Why SCOUT?

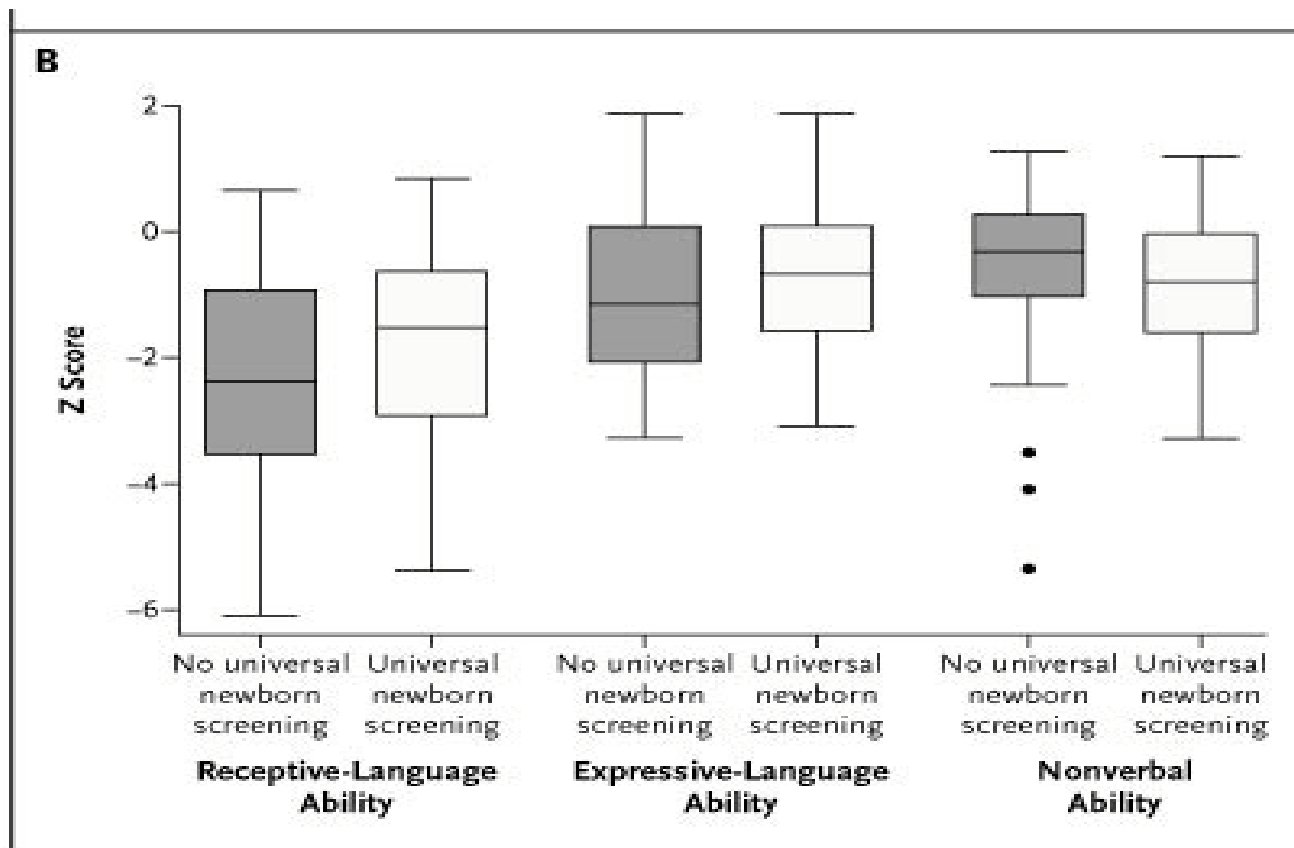
UNHS aims to alleviate huge burden of disability

Good research scant regarding outcomes

2008 US Preventive Services TaskForce

- “Moderate certainty that net benefit of screening all newborn infants for hearing loss is moderate”

Kennedy et al (2007)



Aims

To compare population outcomes of three methods of detecting congenital hearing impairment

- Universal newborn screening (UNHS)
- Risk factor screening
- Opportunistic detection

Sampling

Population-based follow-up of 5-6 year olds born 2003-5 in New South Wales and Victoria

- New South Wales: universal hearing screening
- Victoria: NICU screening, universal risk factor referral, distraction testing

States otherwise similar

Participants had bilateral congenital hearing loss >25 dB HL in the better ear, aided by four years of age

Child Characteristics	Overall	NSW	Vic
Gender (% male)	56	58	55
Age	5y 4m	5y 5m	5y 3m
Age in months:			
Diagnosis	12	8	14
First Aust Hearing	12.5	10	16
Hearing Aid fitting	15	12	18
Performance IQ	102 (16)	103 (16)	101 (16)
PIQ (imputed-basal)	90 (31)	88 (33)	93 (28)
Severity (3FA PTA) (%)			
Mild (26-40)	23	21	24
Moderate (41-60)	25	28	21
Severe (61-80)	15	11	18
Profound (>81)	26	28	24

Measures

Construct	Measure
Language	PLS-4 (receptive, expressive, total) PPVT-4 (receptive vocab)
Academic Achievement	Letter knowledge (PAT)
Cognition	Wechsler Non-verbal
Behaviour/mental health	SDQ
Health related QoL	PedsQL

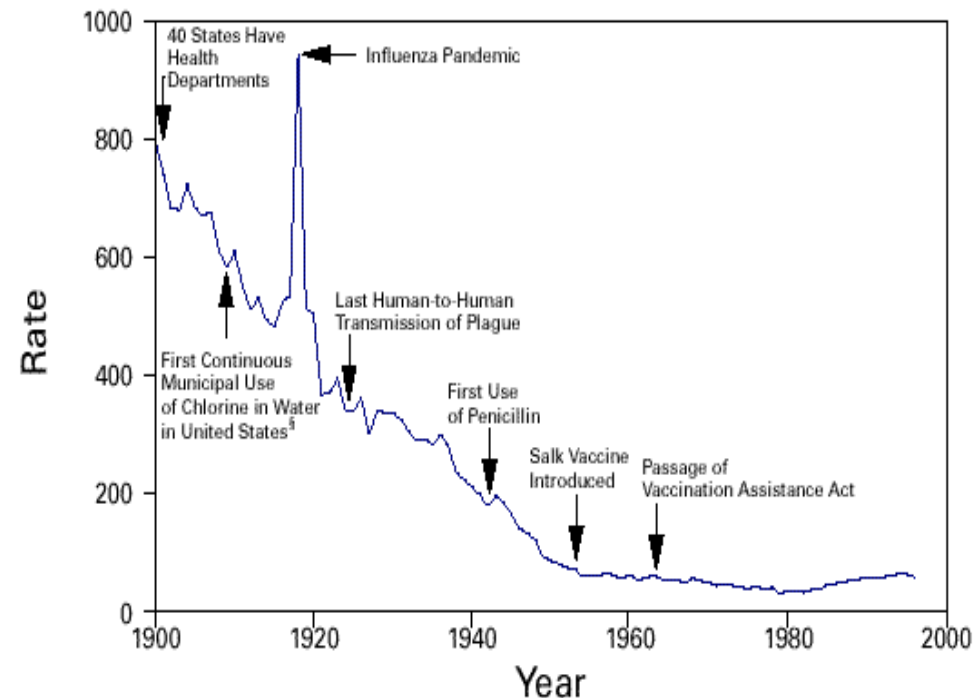
Outcomes at 5-8 years of age

Outcome (Child)	Adjusted Mean for each program		
	Opportunistic (n=71)	Risk Factor (n=52)	UNHS (n=42)
Age diagnosed (months)	22.5	16.2	8.1
Language			
Receptive	81.8	83.0	88.9
Expressive	74.9	80.7	89.3
Vocabulary	79.4	83.8	91.5

10 Great Public Health Achievements

- Vaccination
- Motor-vehicle safety
- Safer workplaces
- Control of infectious diseases
- ?Cardiovascular deaths
- Safer and healthier foods
- Healthier mothers & babies
- Family planning
- Fluoridated drinking water
- Health hazards of tobacco

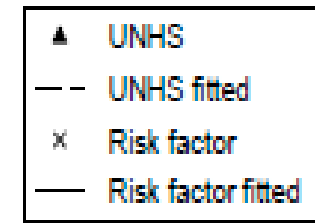
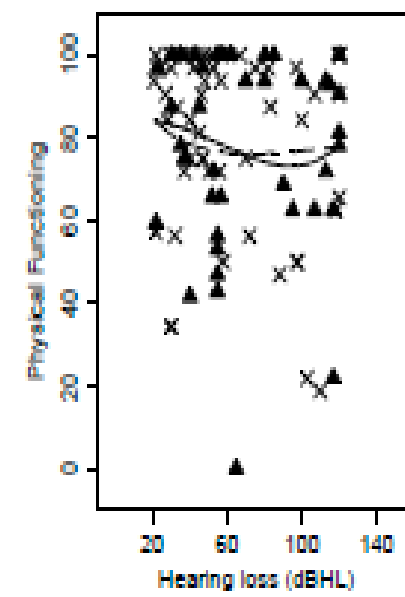
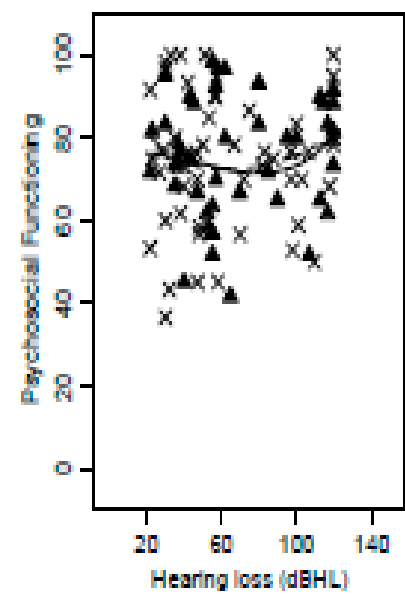
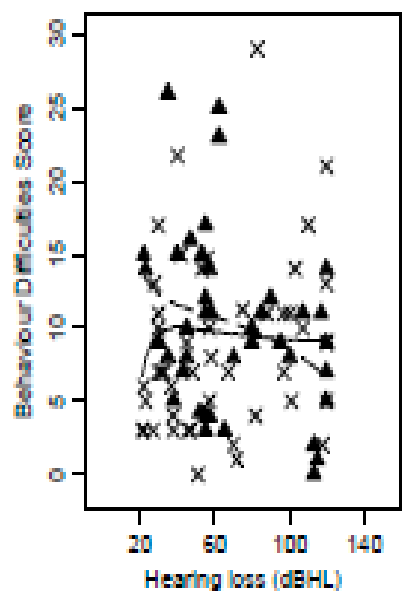
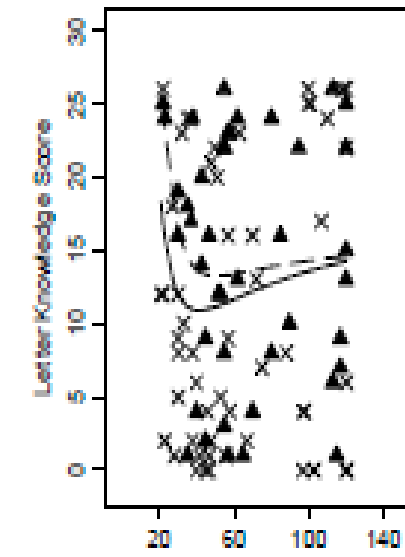
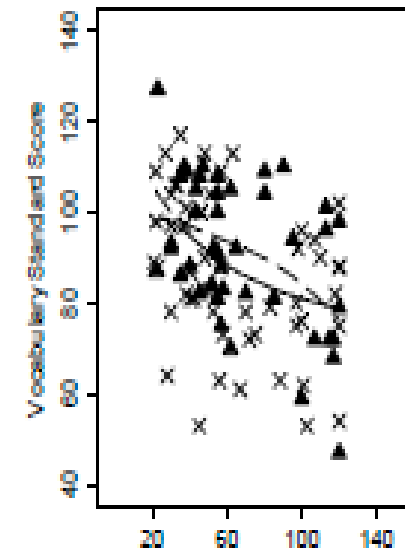
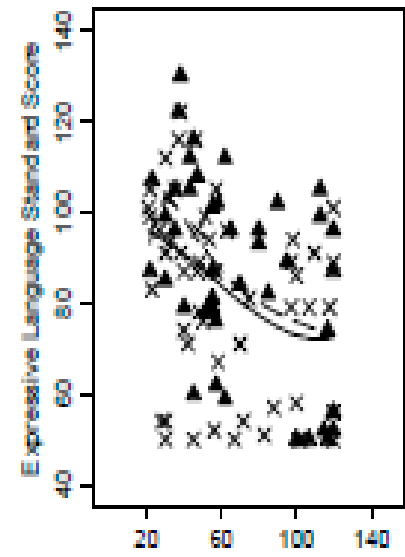
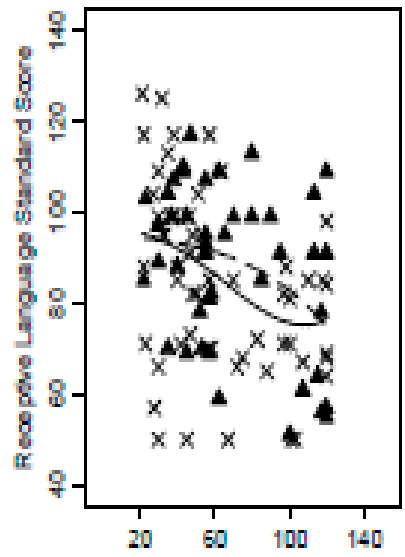
FIGURE 1. Crude death rate* for infectious diseases — United States, 1900–1996†



*Per 100,000 population per year.

†Adapted from Armstrong GL, Conn LA, Pinner RW. Trends in infectious disease mortality in the United States during the 20th century. JAMA 1999;281:61–6.

‡American Water Works Association. Water chlorination principles and practices: AWWA manual M20. Denver, Colorado: American Water Works Association, 1973.



Summary

- Clear stepwise benefits on moving from opportunistic detection to population-based risk factor to UNHS
- But we are yet to realise the full potential of UNHS

Next Steps

- Rigorous optimisation of early pathways
- Research to advance the science of intervention, amplification and hearing restoration

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- n The SCOUT families and children



For more information visit:

www.rch.org.au/ccch/for_researchers/The_SCOUT_study

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