Further expansion of the neonatal screening panel in the Netherlands

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Population	6.01 million	0.35:1	16.8 million
Area	180,693 sq km	4.3:1	41,526 sq km
Newborns	75,000	0.44:1	170,000

Screening programmes in NL

- Overall responsibility by the Ministry of Health
- New programmes/expansion after advice of Health Council (cf. IRB)
- Implementation responsibility by RIVM-Centre for Population Screening
- Independent annual evaluation by TNO-Child Health

- Costs born by social security fund, no fee for parents

Ministry of Health, Welfare and Sport

Ministry of Health

1. request

2. advice

3. assignment for pilot

5. results pilot

6. Assignment implementation

Health Council

4. funding request

ZonMw

Neth.Org.Health Res.

National Institute for Public Health and the Environment
Ministry of Health, Welfare and Sport

bevolkingsonderzoek

RIVM

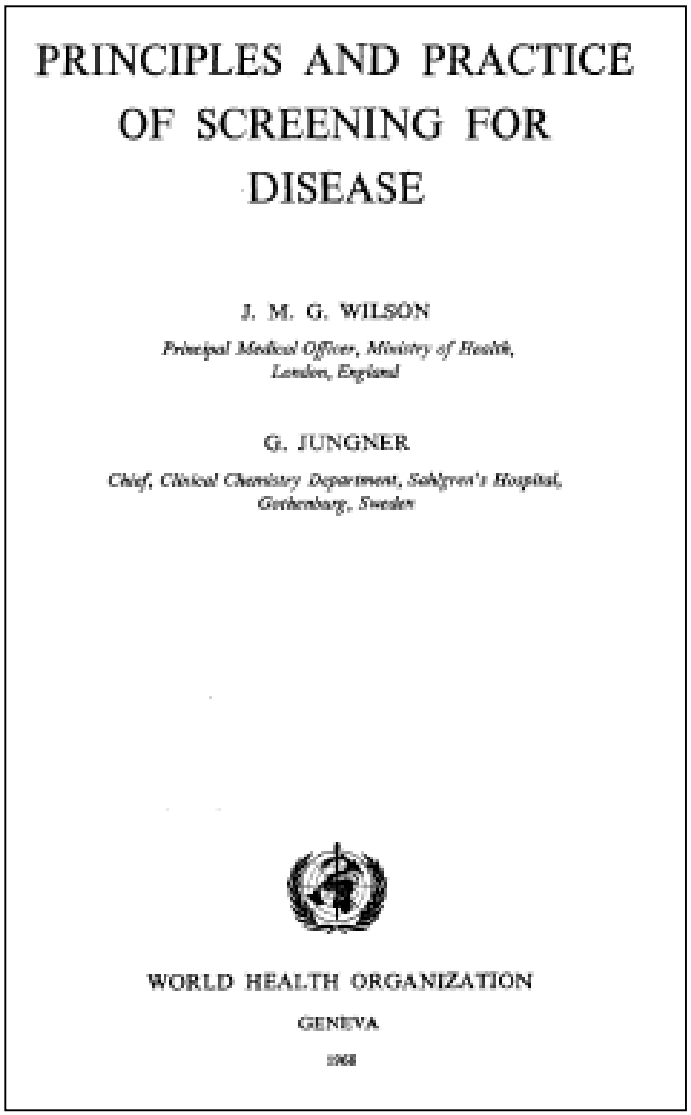
GezondheidsRaad = Health Council

www.gezondheidsraad.nl

http://www.gezondheidsraad.nl/sites/default/files/05@11E.pdf
(publication 2007)

Periodic discussion on screening panel

- Health Council reports in 1979, 2005, 2010, 2015
- Review of literature and contact with international colleagues
- Yardstick are the Wilson & Junger criteria



PRINCIPLES AND PRACTICE OF SCREENING FOR DISEASE

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WORLD HEALTH ORGANIZATION

GENEVA

1968

Published in 1968

Probably the most cited reference in publications and policy documents concerning screening

http://whqlibdoc.who.int/php/WHO_PHP_34.pdf

Current panel (since 2011)

- CAH, CH
- Biotinidase deficiency
- Galactosemia
- Glutaric aciduria type 1
- HMG-CoA-lyase deficiency
- Holocarboxylase synthase deficiency
- Homocystinuria
- Isovaleric acidemia
- Long-chain hydroxyacyl-CoA dehydrogenase deficiency (LCHAD)
- Maple syrup urine disease
- Medium-chain acyl-CoA dehydrogenase deficiency (MCADD)
- 3-Methylcrotonyl-CoA carboxylase deficiency
- Phenylketonuria
- Tyrosinemia type I
- Very-long-chain acyl-CoA dehydrogenase deficiency (VLCAD)
- Sickle cell disease
- Cystic Fibrosis

- (Hearing loss)

Health Council advice April 8, 2015

http://www.gezondheidsraad.nl/sites/default/files/201508e_neonatalscreeningnewrecommendations.pdf
(publication 2015)

Categories

1: *Conditions that qualify for inclusion*

- Neonatal screening prevents significant, irreversible damage and/or yields substantial health gains for the child

- AND

- A test of proven quality is available

Conditions in Category 1

- Carnitine acylcarnitine translocase deficiency (CACT)
- Carnitine palmitoyltransferase deficiency type 1 (CPT1)
- Carnitine palmitoyltransferase deficiency type 2 (CPT2)
- Guanidinoacetate methyltransferase deficiency (GAMT)
- Methyl-acetoacetyl-CoA thiolase deficiency; ketothiolase deficiency (MAT)
- Methylmalonic acidemia (MMA)
- Organic cation transporter 2 (OCTN2)
- Propionic acidemia (PA)
- Mucopolysaccharidosis type 1 (MPS1)
- X-linked adrenoleucodystrophy (X-ALD)
- Severe combined immune deficiency (SCID)
- Beta-thalassemia major (TM), HBH-disease

Categories

2A: *Conditions that require further study*

- Neonatal screening prevents significant, irreversible damage and/or yields substantial health gains for the child

- BUT

- A test of proven quality is not (yet) available

- Pompe's disease not to be included
- Cerebrotendinous xanthomatosis (CTX) not to be included
- Phosphoglucomutase 1 deficiency (PGM 1) not to be included
- Cystinosis not to be included
- Methylene tetrahydrofolate reductase deficiency (MTHFR) not to be included

Categories

2B: *Conditions that may be considered for inclusion after weighing the advantages and disadvantages, including cost-effectiveness*

- Neonatal screening yields some health gains
- A test of proven quality is available

- Galactokinase deficiency (GALK) to be included
- Argininosuccinate lyase deficiency (ASL) not to be included

3: Conditions that do not qualify for inclusion

- Neonatal screening yields no health gains

Note: There may be other advantages for quality of life, such as shortening the diagnostic process (without prevention or limitation of damage to health)

- Multiple Acyl-CoA dehydrogenase deficiency (MADD) not to be included
- Citrulinemia type 1 not to be included

In conclusion: further expansion of panel with

- Carnitine acylcarnitine translocase deficiency (CACT)
- Carnitine palmitoyltransferase deficiency type 1 (CPT1)
- Carnitine palmitoyltransferase deficiency type 2 (CPT2)
- Galactokinase deficiency (GALK)
- Guanidinoacetate methyltransferase deficiency (GAMT)
- Methyl-acetoacetyl-CoA thiolase deficiency; ketothiolase deficiency (MAT)
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- Severe combined immune deficiency (SCID)
- Beta-thalassemia major (TM), HBH-disease

- *discontinue:* homocystinuria

In addition

- What to do with incidental findings, including carriers?

Incidental findings

- Incidental findings are unintended findings that do raise questions.

- *Main question: What is of interest to the newborn child?*
- Incidental findings may be clinically meaningful, of unclear meaning or not clinically meaningful.
- Clinically meaningful conditions with possible actions: report
- Clinically meaningful conditions with no possible actions: do not report

- *EXCEPTION: Carriers*
- Carrier status is a clinically meaningful incidental finding.
- However, the child's right to later decide for himself/herself about knowing or not knowing about carrier status is more important than the interests of the parents in terms of making reproductive choices.
- Therefore, do not report carrier status!

Decision of Minister of Health

- Already *one week* after publication of the advice the MoH accepted it for implementation.

- Under pressure of patient/advocacy groups she decided later that the possible inclusion of non-treatable conditions should be investigated as well.

Next steps

- The National Institute for Public Health (RIVM) has been commissioned to work out an implementation plan, in collaboration with all parties concerned
  - laboratory techniques
  - information materials for professionals
  - information materials for parents
  - expansion of the administrative databases
  - etc. etc.
  - no need to start all new conditions at the same moment
- Plan should be ready by spring 2017

BUT, remember .....

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http://www.mdpi.com/journal/neonatalscreening