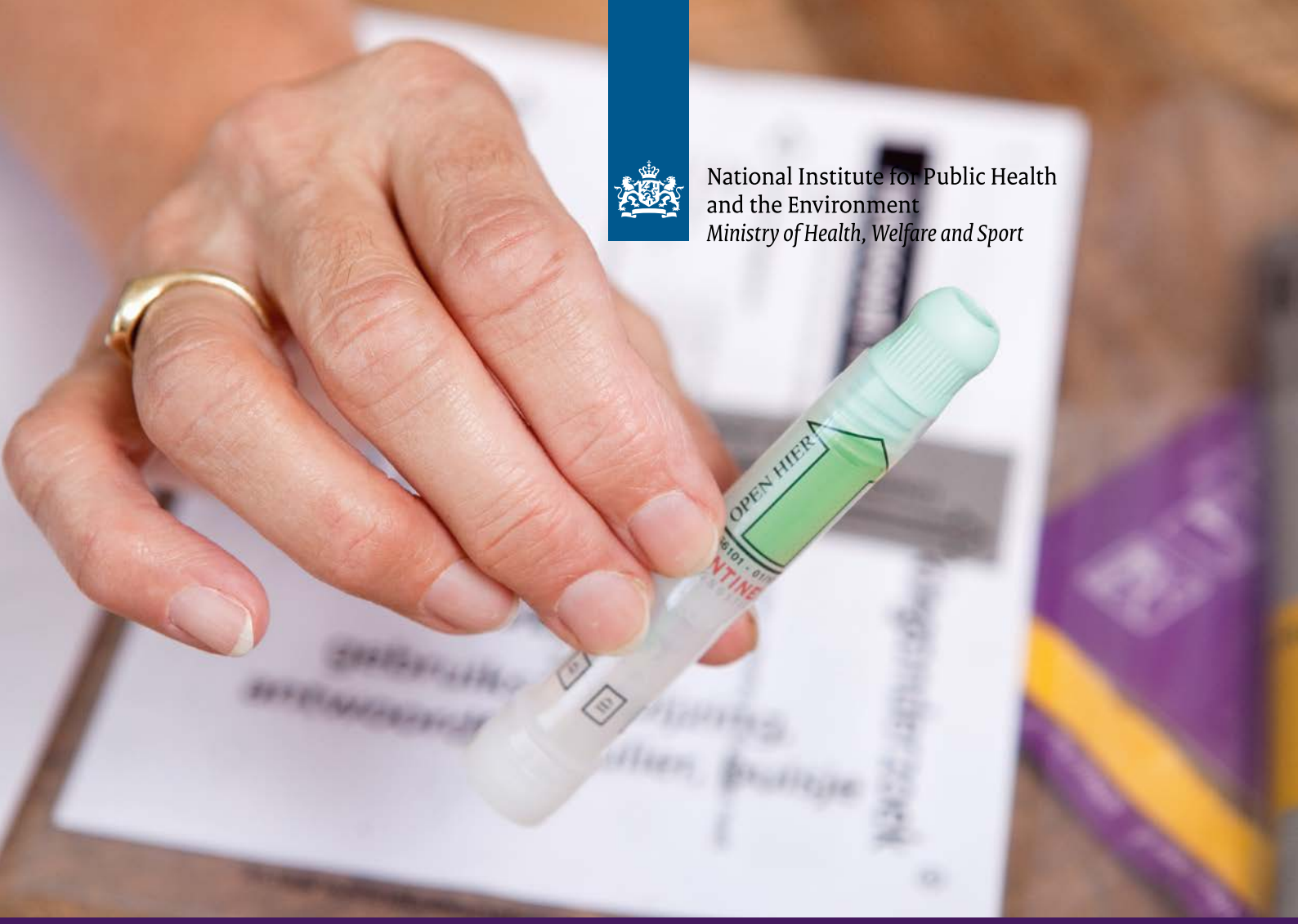

National Institute for Public Health
and the Environment
Ministry of Health, Welfare and Sport

Lessons learned *from the introduction of the* colorectal cancer screening programme *in the Netherlands*

Centre for Population Screening -
National Institute for Public Health
and the Environment

Realisation process: 4 phases

The realisation process was characterised by 4 different phases:

1. Pilot studies
2. Feasibility study
3. Preparations
4. Roll out

This factsheet

In 2014, a colorectal cancer screening programme was launched in the Netherlands. This factsheet describes the lessons learned during the introduction of this nationwide programme. We hope this factsheet will prove helpful for policymakers in other countries by illustrating the most important measures that were taken in the Netherlands and providing a range of practical tips.

The entire realisation process, from pilot studies to the full implementation and integration of the colorectal cancer screening programme across the Netherlands, took about 13 years (Fig.1). The most important topics in each phase are discussed in the following sections.

Network overview

Many policymakers, healthcare professionals, patient organisations, laboratories and participants were involved in each phase of the programme. Please see the **Appendix** for a network overview and a complete list of all the organisations involved and their roles.

Fig.1 Realisation process of colorectal screening in the Netherlands

The Dutch screening context

It is important to be aware of the Dutch governmental context in which this screening programme was realised, as various Dutch government parties are involved in considering, deciding and implementing population screening programmes.

In the Netherlands, it is the Minister of Health, Welfare and Sport (VWS) who is responsible for health screening programmes and who determines priorities etc. The Netherlands Organisation for Health Research and Development (*ZonMw*) and the Health Council have primarily a preparatory task. The Centre for Population Screening of the National Institute for Public Health and the Environment (*RIVM-CvB*) is responsible for the coordination and five screening organisations implement the screening. ZonMW funds research programmes and the *Health Council* provides (independent) advice to VWS on health interventions. For more information on the different roles of the involved (governmental) parties, see this *Policy Framework*.

We formulated the steps in this factsheet to be as general as possible. Each country, therefore, must take their own healthcare system into account when planning and realising their own population screening programme.

Phase 1: Pilot studies

In 2001, the Health Council flagged up colorectal cancer screening in a *signalling report*. Reports by the *Dutch Cancer Society* and *ZonMw* in 2004 and 2005 had subsequently recommended that a programme should be introduced with some urgency.[1]
In 2006, *VWS* concluded that a colorectal cancer screening programme should be seriously considered. As a result, screening trials were set up by ZonMW with funding from VWS. Two pilot studies were performed to investigate which would be the most appropriate screening method to use in the Netherlands. The studies determined the most effective test, the optimum time interval for screening and the willingness among the population to participate.[2, 3] With evidence from these two studies, gaps in our scientific understanding were filled and long term effects could be modelled.
In 2011, VWS deciced to start a screening programme. The two trials continued, and eventually covered 8 years in total (4 screening rounds).
Currently, the results of these trials are still used as a benchmark for the national programme.[4, 5, 6]

Important steps in this 1st phase

- Periodically review and appraise promising health interventions using Wilson and Jungner criteria
- Set agenda (prioritisation of the intervention)
- Set up a research programme and establish funding
- Investigate appropriate screening method (in target population)
- Explore willingness of target population to participate
- Fill scientific knowledge gaps
- Provide final advice on introduction of the screening programme

Perform a pilot study within a part of the target population to collect knowledge and evidence for the implementation of a screening programme.

Phase 2: Feasibility study

In 2009, the Health Council advised VWS that there was sufficient evidence for the introduction of a colorectal cancer screening programme. In preparation for the final decision on the introduction of a nationwide programme, the Minister asked RIVM-CvB to conduct a feasibility study to ascertain the prerequisites for the implementation and successful introduction of a colorectal cancer screening programme.

The *feasibility study* which was set up in cooperation with all relevant organisations (see **Appendix**), showed that the introduction of colorectal cancer screening was widely supported by the different stakeholders.
The study identified the finances, guidelines and quality requirements that were needed and also recommended how the quality of the programme could be monitored. Actions to compensate for the calculated capacity shortfalls (i.e. colonoscopies) were also proposed.

In this feasibility study, a predictive model called the microsimulation screening analysis model (MISCAN) was used. This mathematical model predicts the costs and effects of screenings strategies. During the roll out phase of the programme, this model is still of great value.

Important steps in this 2nd phase

- Acquire broad support for the programme
- Explore (practical) barriers
- Make an agreement and discuss costs for the screening + programme, and the further diagnosis and examination.
- Learn from other screening programmes in your country and other countries
- Identify major implementation activities and their costs
- Final decision to start implementation

It is essential to test support for the programme with political, professional and public stakeholders, stakeholders and identify practical barriers, before the start of the programme.

Phase 3: Preparations

A complete list of all preparatory actions is provided in the *feasibility study*. Important highlights are described below.

In the Netherlands, 5 regional screening organisations for breast and cervical cancer screening already existed. When **setting up the organisation** of the new screening programme, new roles, responsibilities and finances for all stakeholders, therefore, needed to be fitted into the existing infrastructure. Screening is part of a larger system and whether the screening programme is successful depends very much on the level of integration into, and alignment with, this system. An ***implementation framework*** describing the primary process, the roles, responsibilities and powers is essential and should be clear and agreed upon by all stakeholders.

Roles and responsibilities of all stakeholders and their activities should be very explicit and clear. This should be documented (i.e. in an implementation framework).

The **procurement** of services and products for a screening programme may take years. In the Netherlands, the regulations for handling 'European tenders' are laid down in the Public Procurement Act. The procurement of the IT services (screening database), laboratory services, packaging products, FIT-test[6] and the monitoring and evaluation services, started 4 years before implementation. When starting from scratch, the exact demands and wishes for services and products can be unclear for the procuring party; this lack of clarity may also be due to new technologies. Therefore, developing international test criteria as soon as possible is strongly recommended. To prevent any conflict of interest, international experts could be consulted instead of national ones. Also, the length of the agreement for each of the procured services must be carefully considered and the balance between (time)costs and innovations must be taken into account.

International consensus on test standards and characteristics is crucial for the procurement procedure.

Important steps in this 3d phase

- Set up programme organisation and financing
- Set up implementation frameworks
- Start procurement
- Design (central) screening database
- Develop quality assurance system
- Identify key indicators for monitoring and evaluation
- Develop communication tools
- Develop risk and crisis management protocols
- Test (dry run) the functioning of all logistics

Quality assurance and improvement are vital for a screening programme. The goals of the programme can only be achieved when sufficient quality and capacity are guaranteed and structural monitoring and evaluation is performed. A reference function (an external, independent assessor) can be set up to optimise and safeguard substantive medical quality and physical/technical quality. In the Netherlands, reference functions were set up for the FIT laboratories, colonoscopy-centres and pathologists using existing guidelines as a reference. However, because of the character of screening (i.e. approaching an asymptomatic population), additional quality criteria were formulated, for instance, for the selection, admittance, training and auditing of ***colonoscopists***. It is essential, therefore, to have an unambiguous set of parameters if quality variation is to be avoided. See the RIVM website for the different quality requirements applicable to FIT laboratories, colonoscopists and pathologists.

Set up independent reference functions to safeguard quality.

Many preparatory activities are related to **communication**.

Materials (*folders*, websites, factsheets, letters, awareness-raising messages) to inform the public and professionals, and to invite clients to participate, were carried out in 2012 and 2013. These messages were also intended to prevent opportunistic screening. All communication materials that were to be sent directly to clients were first pre-tested in a subgroup/sample of the general population. Making an informed choice is an important issue in The Netherlands, therefore an overview of both benefits and drawbacks of the screening programme had to be included in the communication materials.

Involve critics using the different communication materials to provide a balanced overview of the benefits and drawbacks of the programme.

Risk management and crisis management *protocols* were developed for the screening programme. The purpose of these protocols was to: **a)** Provide insight into risky processes and be prepared for (any possible) risks (raise risk-awareness,) **b)** Clarify the decision-making process and responsibilities in case of incidents and emergencies and to **c)** Ensure a system of low-entrance and safe reporting of incidents.

A central screening database that includes all relevant data is recommended for appropriate and short cycle monitoring.

Phase 4: Roll out

The Health Council recommended a phased rollout of the screening programme in the Netherlands to allow time for the (initially limited) colonoscopy capacity to be expanded. By using a phased rollout, the colonoscopy capacity could be increased step by step. Consequently, in the first year, the 63, 65, 67, 75 and 76 year old age groups were invited. At the end of 2014, 81.3% of the target population was invited. In the following 2 years this increased to 94.5%. A phased rollout can be useful for identifying any possible start-up problems. When selecting who to invite first a mix of age groups is preferable. In the Netherlands, the programme started with relatively older people who have a higher possibility of referral. This resulted in a great demand for colonoscopies.

Short-cycle monitoring is necessary to warrant essential and well-timed modifications to the programme.

Important steps in this 4th phase

- a slow, phased rollout to identify start-up problems
- invite a mixed age-group
- monitor key indicators on a short-cycle base

The predefined indicators could be generated quickly from a central screening database. Hence, the first *results* of the Dutch colorectal screening programme were available soon after its start. In this way - besides the close contact and quick communication with stakeholders, the efforts made by all the stakeholders could be acknowledged rapidly.

During the rollout phase in the first year (2014) (monthly) short-cycle monitoring reports showed that waiting times for colonoscopies were increasing substantially. This was the result of a higher than expected attendance (71.3%) and referral (12.2%) rate. In order to restore the balance between the harms and benefits of the programme and to assure a more optimal use of the available colonoscopy capacity, the FIT cut-off value of 15 µg Hb/g was raised to 47 µg Hb/g.[7] This essential modification was possible because of the use of a central screening database and the availability of short cycle monitoring.

Table 1. Results of phased rollout phase (first 3 years)

		2014	2015	2016
Number and % of target group invited		703.626 (81.3%)	1.171.550 (89.6%)	1.543.223 (94.5%)
Cut-off value (µg Hb/g)		15/47	47	47
Attendance		71.3%	73.0%	71.8%
Referral		12.2%/6.4%	6.4%	6.1%
Distance to nearest colonoscopy centre		unknown	21.1 km	16.3
Time between test result and intake colonoscopy		20.6 days	23.6 days	17.2 days
Colonoscopy attendance		79.5%	79.4%	82.8%
PPV	**AAD+CRC**	41.5%/58.7%	57.2%	53.7%
	CRC	7.2%/9.5%	8.8%	8.3%
CRC detection		0.70%/0.49%	0.46%	0.41%

PPV: Positive predictive value. AAD: Advanced adenomas. CRC: Colorectal cancer.

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Appendix: Overview of involved parties

Abbreviation		Organisation
VWS	Ministry of Health, Welfare and Sport, Public Health department	
RIVM-CvB	Centre for Population Screening of the National Institute for Public Health and the Environment	
Health Council	The Health Council of the Netherlands	
Experts	Expert committee of Health Council	*https://www.gezondheidsraad.nl/en/task-and-procedure/areas-of-activity/prevention/a-national-colorectal-cancer-screening-programme*
ZonMW	The Netherlands Organisation for Health Research and Development	
SOs	5 screening organisations	North
		East
		West-Central
		South-West
		South
Scientific study groups	FOCUS trial	Radboud University Nijmegen Medical Centre
		Academic Medical Centre (AMC) Amsterdam
		Comprehensive Cancer Centre East (IKO)
		Comprehensive Cancer Centre Amsterdam (IKA)
	CORERO trials	Erasmus Medical Centre Rotterdam
		Comprehensive Cancer Centre Rotterdam
		Screening Organisation South-West

Appendix: Overview of involved parties *(continued)*

Abbreviation		Organisation
Medic. Prof. orgs	17 Medical professional organisations	Netherlands Society for Clinical Chemistry and Laboratory Medicine (NVKC)
		Dutch Association of Gastroenterologists (NVMDL)
		Netherlands Surgical Association (NVvH)
		Dutch Pathology Association (NVVP)
		Dutch College of General Practitioners (NHG)
		National Association of General Practitioners (LHV)
		National Reference Centre for Population Screening (LRCB)
		Netherlands Society for Gastrointestinal Surgery (NVGIC)
		Dutch Society for Clinical Genetics (VKGN)
		Comprehensive Cancer Centre of the Netherlands (IKNL)
		Pathological Anatomical National Automated Archive (PALGA)
		Dutch Surgical Colorectal Audit (DSCA)
		Netherlands Foundation for the Detection of Hereditary Tumours (STOET)
		Central Support Organisation for Peer Review (CBO)
		Dutch Association of Internists (NIV)
		Dutch Association of Nurses and Caregivers (V&VN)
		Dutch Health Institute (ZIN)
		Dutch Hospitals Association (NVZ)
		Dutch Federation of Academic Centre (NFU)
QAs	Quality Assurances (reference functions)	National Official Monitoring FIT (LFMI)
		Testing Coordinating Gastroenterologist (TCMDL)
		Regional Coordinating Gastroenterologist (RCMDL)
		Regional Coordinating Pathologist (RCP)
Ca found	Dutch Cancer Society (KWF)	
Pat. found	4 patient foundations	Foundation for Patients with Cancer of the Alimentary Canal (SPKS)
		Dutch Federation of Cancer Patients' Organisations (NFK)
		Digestive Diseases Foundation (MLDS)
Insurance comp's	Insurance companies	Umbrella organisation of Health Insurers (ZN)
Labs	3 FIT laboratories	
Colonoscopy centres	All contracted colonoscopy centres	
Post	Post & Packaging Services	PostNL
		Packing Service (Daklapack)
GP	General Practitioners	Dutch College of General Practitioners (NHG)
		National Association of General Practitioners (LHV)
M&E orgs	2 Monitoring & Evaluation Organisations	Erasmus Medical Centre
		Dutch Cancer Institute (NKI)

See for more information

https://www.rivm.nl/en/Topics/B/Bowel_cancer_screening_programme

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