

# Decision support with NHGDoc

A guideline-driven CDSS focusing on multiple  
disease areas in primary care

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## Overview

1. Primary healthcare in the Netherlands
2. Using CDSSs to improve the uptake of guidelines
3. The Dutch CDSS initiative: NHGDoc
4. Future perspectives and challenges

## Primary care in the Netherlands

- Q GP gatekeeper to specialist care
- Q Appr. 4.500 general practices
- Q One organization (Dutch College of GPs) responsible for guideline development
- Q More than 100 guidelines developed for primary care



## GAP between theory and practice

- Q Adherence to guidelines is suboptimal
- Q Large variation between general practices, GPs and guidelines

Lugtenberg, M. (2011). *Guideline adherence in practice: Exploring the gap between theory and practice*. Dissertation. Tilburg: Tilburg University.

## Using CDSSs to improve the uptake of guidelines

Clinical decision support systems:

“  
*Information systems designed to optimize clinical decision making. By matching characteristics of individual patients to a computerized medical knowledge base they can provide patient-specific recommendations to healthcare providers during patient care.*  
”

## Effectiveness of CDSSs

- Q Moderate effects on process of care, less on patient outcomes
- Q Success factors vary across studies
- Q Mixed results also due to heterogeneity of studies
  - Types of decision support
  - Types of healthcare settings and providers
  - Research methods used



## The Dutch CDSS initiative: NHGDoc

- Q Collaborative effort between ExpertDoc and NHG
- Q Computerized decision support system integrated in EHR system
- Q Target group: GPs and practice nurses
- Q Provides patient-specific advice on drug prescription, management and patient data registration





## Unique features of NHGDoc

- Q Guideline driven: CDSS reminders distracted from national prevailing guidelines
- Q Covers multiple domains of care / disease areas
- Q Developed and designed with guideline developers from NHG
- Q Supported by Ministry of Health, Sports and Welfare



## Modules in NHGDoc

2009

2010

2011

2012

2013

2014

Cardiovascular risk management

Viral hepatitis and other liver diseases

Thyroid disorders

Diabetes Mellitus type 2

Asthma/COPD

Atrial fibrillation

Subfertility

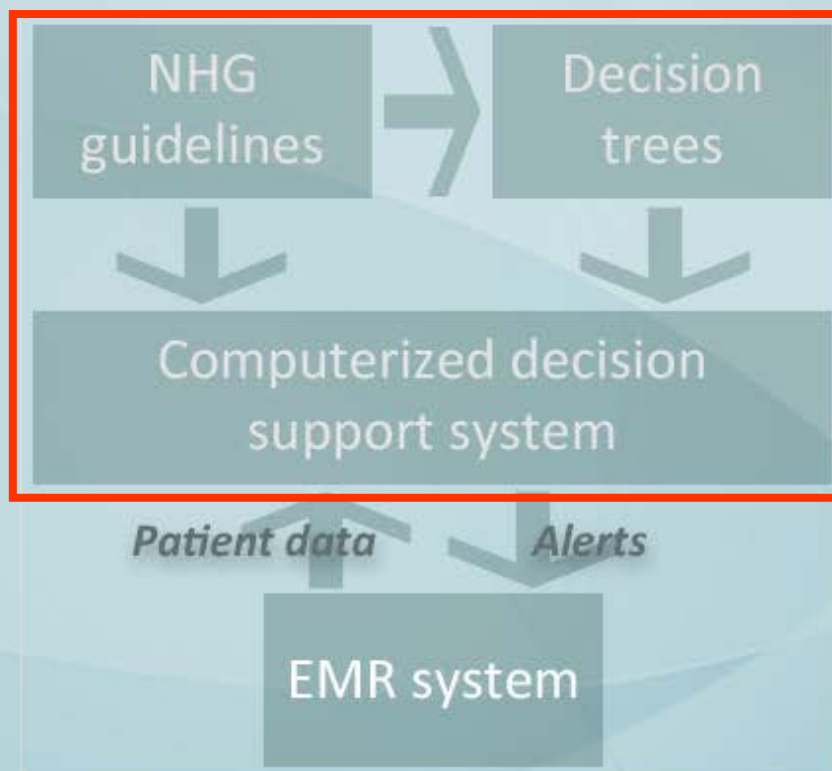
Chronic renal failure

## How does NHGDoc work?

- GPs opens patient record
- Anonymized patient data are send to NHGDoc
- Data are compared to digitized guideline recommendations
- In case of discrepancies → GPs receives alert

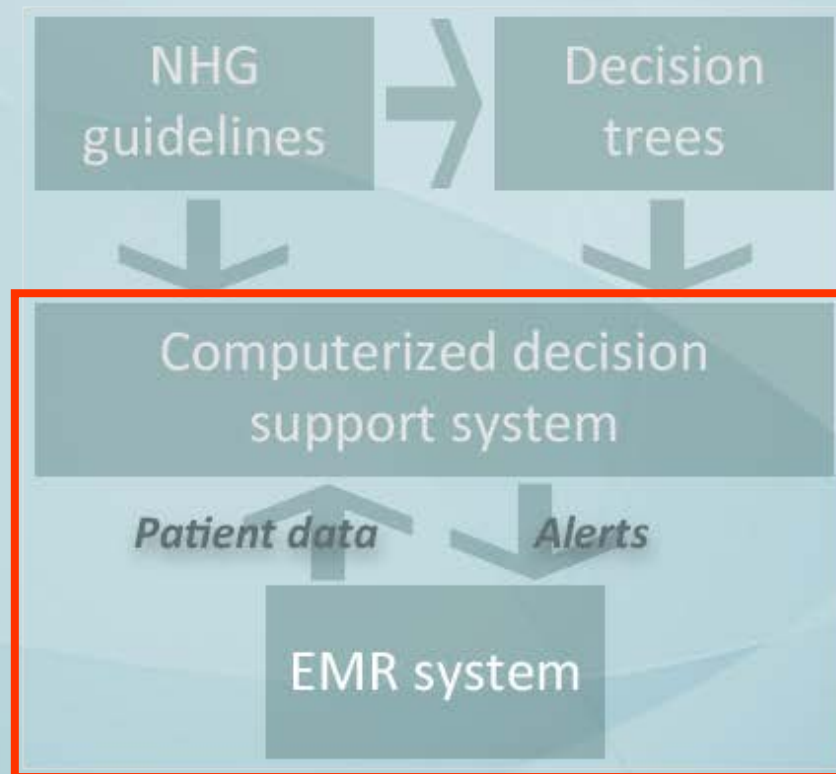
## How does NHGDoc work?

- Digitized NHG guidelines → NHGDoc



## How does NHGDoc work?

- EMR is opened
- Anonymous patient data send to NHGDoc
- Discrepancy → Alert



## Example of an NHGDoc alert

CVRM

Lever

Mijn NHGDoc

### Medicatie

- Hoog dosering statine zo mogelijk op, of vervang door atorvastatine (20 of 40 mg) of rosuvastatine (10 of 20 mg).
- Indicatie voor antihypertensivum. Voorkeur: 1. ACE-remmer 2. bètablokker .

### Beleid

- (geen)

### Breng dossier op orde met

- Roken.
- BMI.
- Alcoholgebruik.
- Hoofdbehandelaar CVRM.

### ☐ Patiëntprofiel

- Niet nuchter glucose (NHG371) (5.2 mmol/l, datum: 13-12-2010)
- Nuchter glucose (NHG372) (5.3 mmol/l, datum: 19-1-2012)
- hart-/vaatziekte in naaste familie <65jr (ja, datum: 18-1-2012).
- Kreatinine (83 micromol/l, datum: 19-1-2012).
- Triglyceriden (1.1 mmol/l, datum: 1-5-2012).
- HDL-cholesterol (1.2 mmol/l, datum: 1-5-2012).
- LDL-cholesterol (3.4 mmol/l, datum: 1-5-2012).
- Cholesterol totaal (5.1 mmol/l, datum: 1-5-2012).
- Systolische bloeddruk (165 mmHg, datum: 1-5-2012).
- risicoverhogende factoren HVZ (tenminste 1 sterk of 2 mild, datum: 18-1-2012).
- risico HVZ volgens CVRM richtlijn 2012 (10% - 19% (geel), datum: 18-1-2012).
- Voorgescreven statine/opnameremmer (Simvastatine, voorschrijfdatum: 24-1-2012).

## Availability of NHGDoc in the Netherlands

More than 1.300 Dutch general practices

→ Appr. 2.800 GPs & practice nurses



## Evaluating NHGDoc's effectiveness

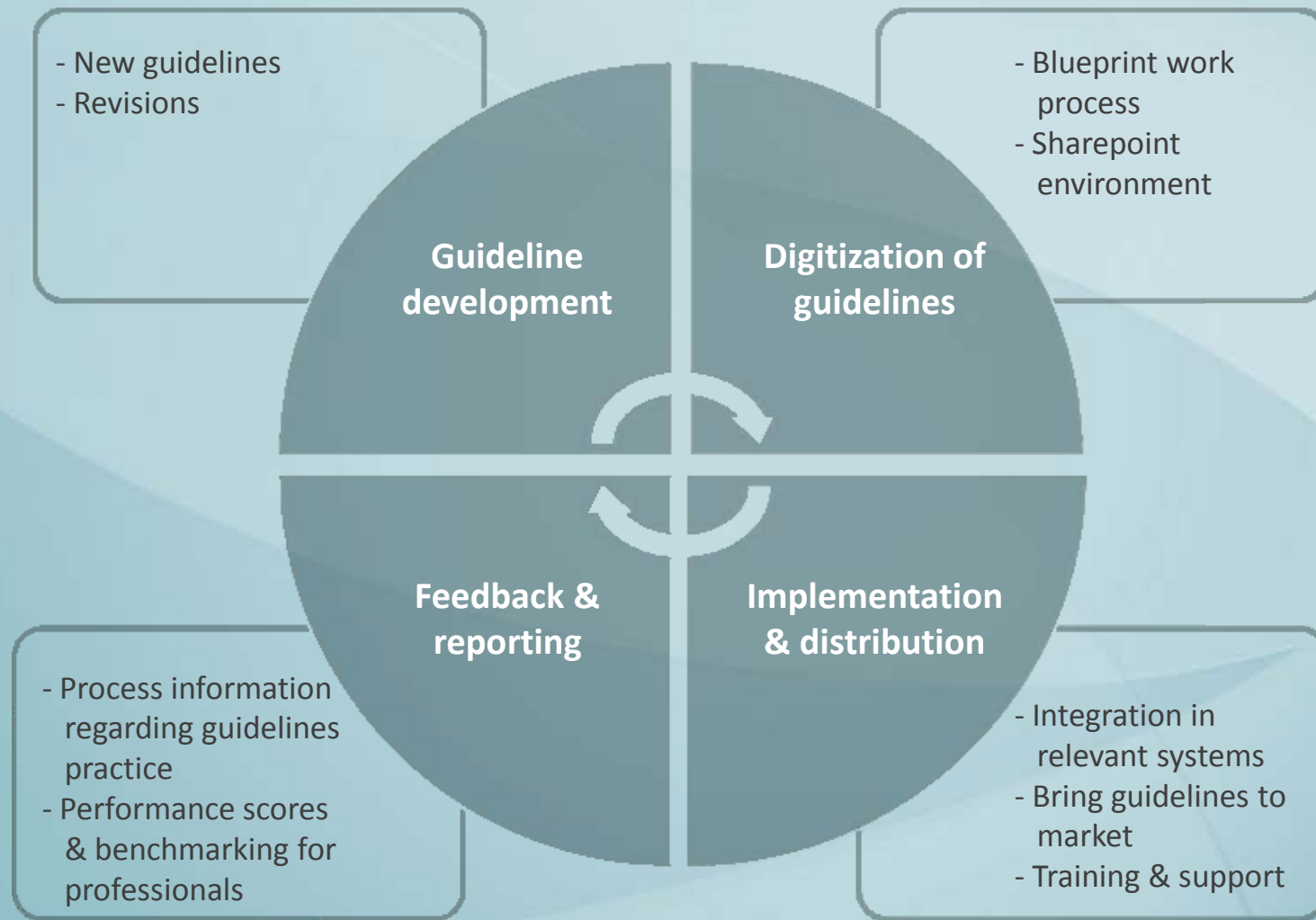
- Q Cluster RCT ongoing within 230 general practices in the Netherlands
- Q Effectiveness of NHGDoc in terms of improving process of care and patient outcomes
- Q Final results expected August 2014



## Future perspectives and challenges

- Q Dealing with the high number of guidelines/alerts in NHGDoc
  - Q User-friendly and flexible designs with options to personalize decision support
  
- Q Using NHGDoc as educational tool for practitioners
  - Q Feedback reports and E-coaching
  
- Q Using NHGDoc as information tool to update guidelines
  - Q Performance scores and process information

## ExpertDoc Guideline Management Cycle



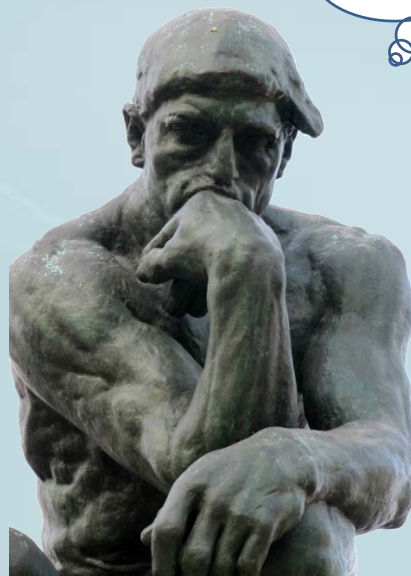


## Disclosure of Interests (last 3 years)

**Marjolein Lugtenberg, PhD**

I certify that, to the best of my knowledge, no aspect of my current personal or professional situation might reasonably be expected to affect significantly my views on the subject on which I am presenting.

Questions?



**Thank you!**

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