



# **Danish primary care: Innovation strategies over the past decade'**

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# Outline

1. Snapshots of Danish health care: Overview & context
2. Examples of innovations and the up-take
  - Innovation 1: Reduction of hospital readmissions
  - Innovation 2: (compulsory) Health agreements between the each of the 5 regions and the municipalities in the region
  - Innovation 3: Quality assurance in general practice through data capture
  - Innovation 4: Fostering innovation through targeted 'seed' money
  - Innovation 5: The common national medicines card/database

# Danish health care: a snapshot I

## *Basic facts:*

**Population:** 5.4 million. An 'aging' population

**% of GDP to health:** 11%. The US: 17%. OECD average 9.3

**Per capita health exp. (\$PPP):** 4698. The US: 8745. OECD average: 3484

**Growth rate health exp. 2000-2012, %:** 2.5. The US: 3.9. OECD: 3.9

**Largely tax financed:** % of public expenditures for health: 14-15%

**Life expectancy at birth:** 80.1. The US: 78.7. OECD average: 80.2

## *Challenges*

**Growing share, %, of +64 years old:** 15 in 2010 -> 20 in 2020->25 in 2040

**Growing number with one or more chronic diseases**

**Declining/stagnating share of 15-64 years old**

**Annual growth rate in health exp.:** Towards 2020: 0 – 0.5% per year

**Develop integrated care**

*Source: OECD Health Statistics 2014*

# Danish health care: a snapshot II

**General practitioners/family doctors**  
(+ office based specialists, dentists,  
physiotherapist etc..) **Private (self-employed) practitioners**  
working on contract with the region

**Hospitals**  
(98% of all  
hospital beds  
in public hospitals  
with full time  
employed doctors)

Largely tax financed  
+ co-payment (app. 17%)  
Hospital care and primary  
care free at the point of use

**Local community  
health care**  
(98 municipalities)

- home nursing + home help
- rehabilitation
- health promotion and prevention
- child dental care
- social psychiatry

# Danish health care: a snapshot IV

**General practitioners/family doctors**  
(+ office based specialists, dentists,  
Physiotherapist etc..)

**Primary care**  
about 19% of  
total expenditures  
(excl. co-payment)

**Hospitals**  
(98% of all  
hospital beds  
in public hospitals)

Largely tax financed  
+ co-payment (app. 17%)  
Hospital care and primary  
care free at the point of use

**Local community  
health care**  
(98 municipalities)

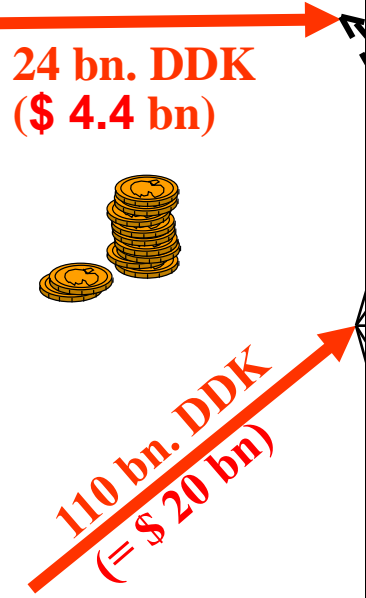
- home nursing + home help
- rehabilitation
- health promotion and prevention
- child dental care
- social psychiatry

**Total: 143 billions DDK. i 2012**  
**=( \$ 26.0 bn)**

## 2. Health sector

**1. PATIENTS**

**Co-payment:**  
 24 billions DDK. -  
 = 17% of total  
 health expenditures

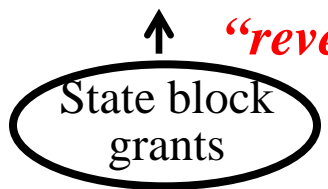


Pharmacies(drugs)	7%
Adult dentists	1%
Physiotherapists & Chiropractors	1%
GPs	8%
Office based specialists	3%
Hospitals	77%
Central admini. expenditures	2%

Nursing homes*	
Municipal health services	14%
Rehabilitation	26%
Free physiotherapy	11%
Municipal dentistry	32%
Prevention & health promotion	9%
Home nursing.	8%

**3. The 5 regions**

110 billion DDK  
 = 77% of total health expenditures



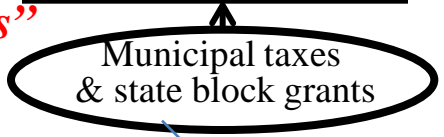
**↑ 10 billions DDK\***  
**(= \$ 4.8 bn)**

**98 municipalities**

10 Billions DDK\*  
 = 6.9 % of total health expenditures

•Exclusive of expenditures for nursing homes & home help

**“revenues”**



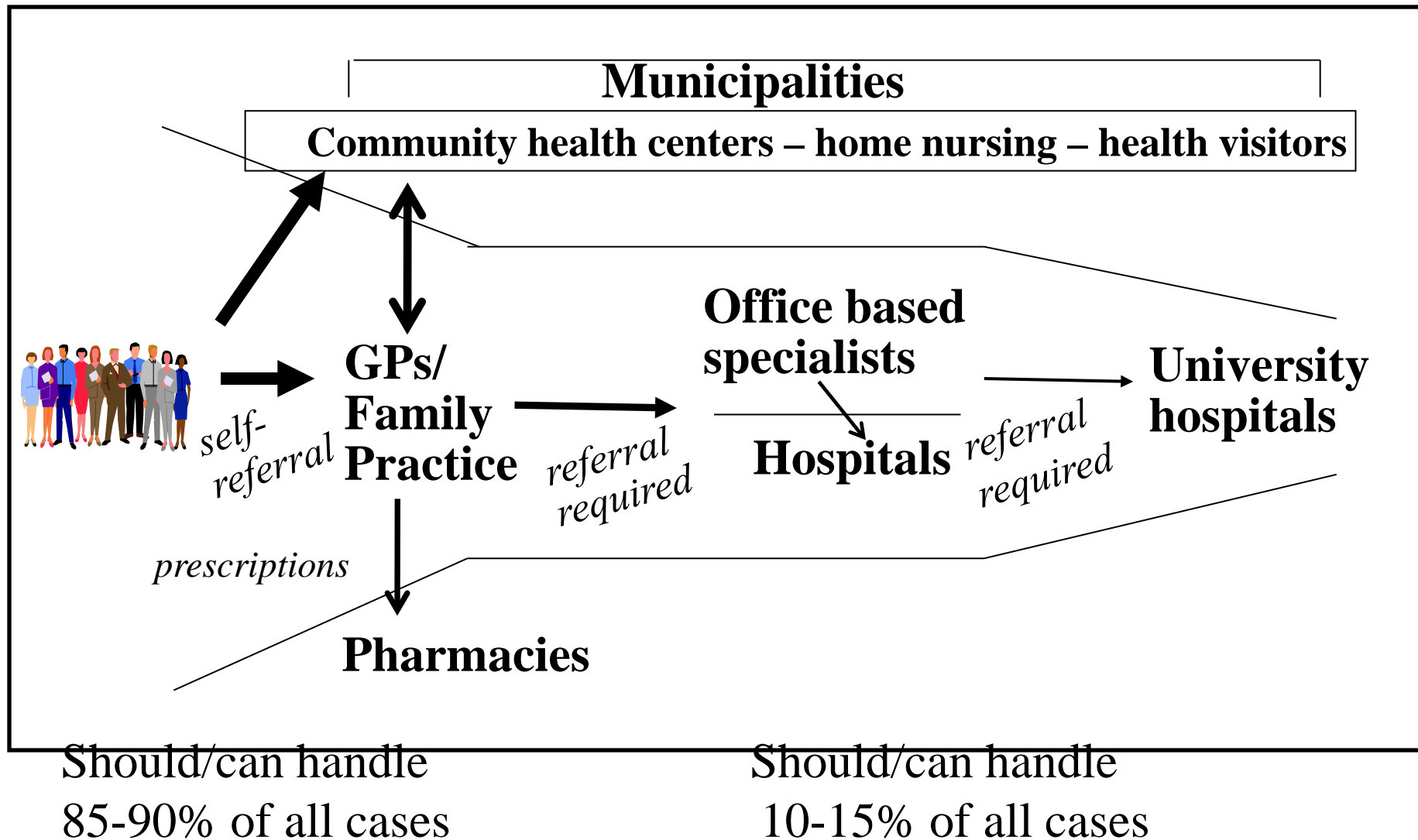
# General practice:

## A corner stone of the Danish Health System

- ' Gate keepers '
- Alle Danes have to be on the ' list ' of a GP of their own choice (the family doctor)
- 85-90% of the population is contact with a GP during a year
  - of which 10-15% are referred to more specialized services
- On average 7 – 8 contacts per year (consultation, telephone, e-mail, home visit)

# The referral chain:

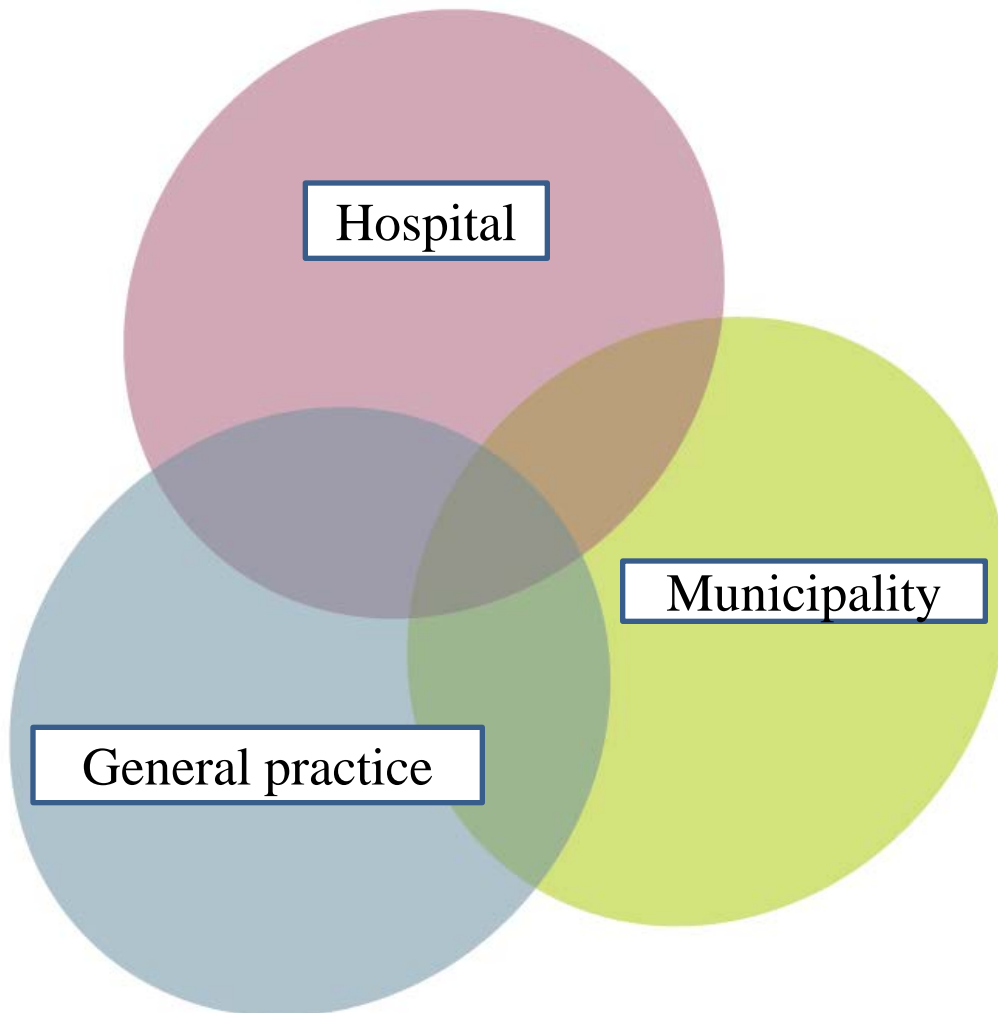
**Offer (adequate) treatment at the lowest specialized level  
- save specialized health care facilities  
for the complicated cases**





# Coordination and cooperation needed to develop (better) integrated care

Guided by the LEON-principle: Lowest effective care level  
e.g. if treatable in the primary health care sector, it should be treated there.



## Some issues:

- hospital readmissions
  - can primary care contribute?
- care of the chronically ill
  - major role for primary care
- health promotion
  - major role for primary care

# Innovation strategies

Innovation is needed in view of key challenges facing Danish health care:

- Growing share,%, of +64 years old
- Growing number with one or more chronic diseases
- Very low growth rate in health care expenditures
- Develop integrated care

Ideally innovations should increase cost efficiency and provide higher quality services

No formal national innovation strategy has been developed (yet).

# Definition:

Innovation is the process of translating an idea or invention into a good or service that creates better value than existing approaches

- Innovations may be divided into **two broad categories**:
  - *Evolutionary innovations* (continuous or dynamic evolutionary innovation) that are brought about by many incremental advances in technology or processes and
  - *Revolutionary* (also called discontinuous innovations) which are often disruptive and new.

## Approaches to innovation:

- *bottom up/bottom down* – driven by professionals
  - ‘fiat’ as part of legislation or contract with/without funding
- through ‘*seed funds*’ for experimentation
- *professional development*

# 5 examples from primary care in Denmark

- 2 based on 'fiat' – one top down, one bottom up
- 1 based on 'seed funds'
- 1 based on professional development and interest
- 1 based on easing administration of prescription subsidies

All of them reasonable successful with good take-up addressing important policy relevant areas.

# Innovation 1: Reduction of hospital readmissions

## Comprehensive discharge follow-up in patients' homes by GPs and district nurses of elderly patients

Because of their often frail condition, discharged, impaired elderly patients face a high risk of readmission and risk being “left in limbo” if a healthcare professional is not assigned explicit responsibility for their situation upon their discharge

1. Study: Patients were randomized to either an intervention group receiving a structured home visit by the GP and the district nurse one week after discharge followed by two contacts after three and eight weeks, or to a control group receiving the usual care.
2. A total of 331 patients, average age 78 years, were included. (7 municipalities and 99 GPs involved in the trial)
2. *Main outcome measures . Readmission rate within 26 weeks after discharge among all randomized patients. Control of medication, evaluated 12 weeks after discharge on 293 (89%) of the patients by an interview at home and by a questionnaire to the GP.*

4. **Main results** Twenty-six weeks after discharge, 86 (52%) patients in the control group and 67 (40%) in the intervention group had been readmitted (p 0.03)
- **Relative risk reduction (RRR) 23%.**
  - A tendency towards a reduced number of days spent in hospital within 26 weeks was seen in the intervention group (p 0.07, Wilcoxon rank-sum test)

The economic analysis indicates that the intervention is cost-neutral, but it tends to reduce costs.

5. Take-up of the model: Within 2-4 years the model had been adopted in most of the country:
- The regions (hospitals) had a clear interest; so did the municipalities (decrease in municipal co-financing) payment of GPs involvement had been solved.

# Effektiv kommunal forebyggelse

– med fokus på forebyggelse af indlæggelser og genindlæggelser

April 2013

Joint publication by the Ministry of Health, Ministry of Finance, Danish Regions and Local government Denmark

On

*”Effective municipal prevention with focus on hospitalizations and readmissions”*

Example of inspiration material developed the national authorities.

1. It is believed – and partly documented – that targeted primary care can reduce number of hospitalizations/readmissions
2. One study focusing on non-surgical, short term hospitalizations of +65 years old found that 27% could have been avoided if ‘appropriate’ primary care was offered – in particular involving GPs.

*Souce: UNDERSØGELSE AF AKUTTE MEDICINSKE indlæggelser under 24 timer blandt 65+ årige, 2014*

# Community/municipal health care centers

1. Many/most municipalities have organized most of their health services in health care centers
  - NOTE: Municipalities are not allowed to employ physicians but can use GPs (provided that an agreement has been reached)
2. Several municipalities have 'acute beds' in the health care centers and/or nursing homes staffed by specially trained nurses that GPs can refer patients to who alternatively might have been hospitalized
3. However, very few/no good evaluations of this strategy to prevent hospitalizations



## **Innovation 2: (compulsory) Health agreements between the each of the 5 regions and and the municipalities in the region**

1. Introduced by law when an administrative reform was introduced January 1st 2007.
2. One of the aims was to **develop better cooperation and coordination** between the regions (hospitals, GPs ..) and the municipalities whose responsibility for providing health care was increased
3. The introduction of **health agreements** was one of the tools.
  - Another tool was the introduction of municipal co-financing, i.e. every time a citizen of a municipality is hospitalized the municipality has to pay part of the hospitalization costs (< 20%).
4. The agreements are made at the start of the regional and municipal election cycle every four years and cover six specific areas: hospital admission and discharge processes, rehabilitation, medical devices and aids, prevention and health promotion, mental health, and follow-up on adverse events— with the option of adding others, for instance electronic exchange of discharge information.

### Box 3: Examples of Danish healthcare agreements

#### *Agreement on hospital admission and discharges*

- How the parties will ensure that relevant information on patient treatment and care, etc is exchanged between the municipality, the GP, the hospital, and possibly other relevant players; how it will be ensured that the information is provided on time; how to ensure that relevant information is communicated to the patient and, where appropriate, to relatives and that the parties are available for further dialogue and questions from the patient
- How the parties will prevent emergencies or unplanned admissions
- How the parties will ensure timely clarification of the individual patient's needs after discharge from hospital, including coordination of discharge timing and discharge related services
- How the parties will ensure that patients can be discharged from hospital as soon as they meet certain discharge criteria
- How the parties will follow up on the agreement

#### *Agreement on health prevention and health promotion*

- Division of tasks between the regions and municipalities in relation to the patient directed disease prevention and health promotion efforts
- How the parties will ensure coherence of regional and municipal disease prevention and health promotion efforts
- How the parties will communicate about the organisation, development, and quality assurance of patient directed disease prevention and health promotion efforts
- How the parties will ensure that policies for patients with an established need for patient oriented disease prevention are organised in accordance with scientific evidence
- How the parties will ensure that chronically ill patients are in contact with the relevant actors in the region and municipality in relation to disease prevention and health promotion
- How the parties will follow up on the agreement

**Weakness:** 1. Lacking involvement and commitment of GPs (to become better from 2014 and onwards). 2. lack of sanctions if not followed

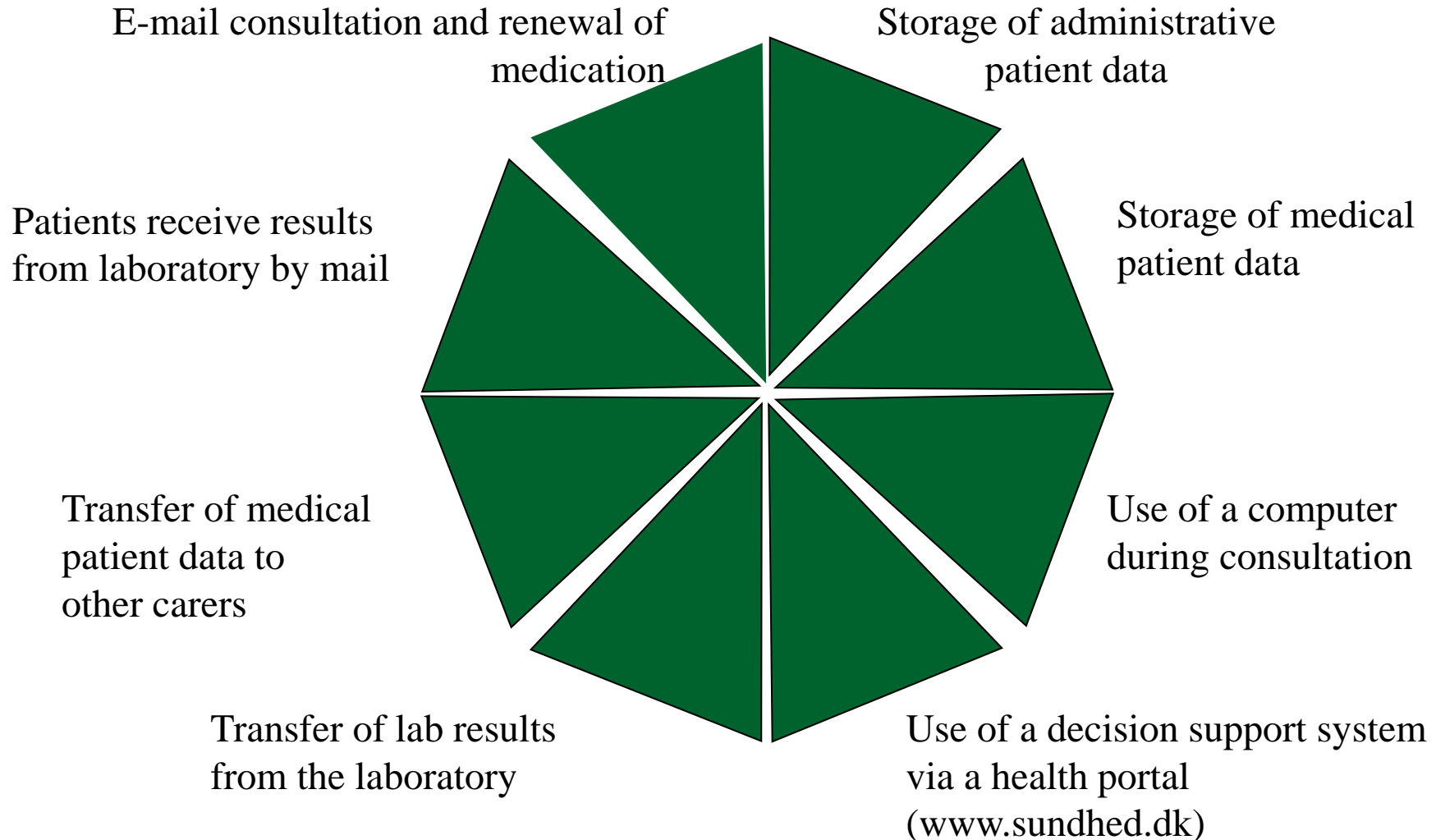
*Source: Rudkjøbing et al: Integrated care: a Danish perspective, BMJ 2012;345:*

# Innovation 3: Quality assurance in general practice through data capture

1. In an international context general practice in Denmark is a role model for good clinical practice in the area of diagnosis coding (ICPC) and the use of electronic health record systems (EHR) - 100% coverage.
2. As a natural part of the development of general practice IT-tools are continuously developed to support GPs in making decisions about the treatment of their patients with **chronic diseases**.
3. In this context *Data Capture* has been invented.
4. Within a period of two years more than 96 % of Danish GPs have installed Data Capture, providing them - after a certain period of time - the possibility of a total quality management of chronic diseases such as diabetes, COPD, cardiovascular disease and depression.
5. The high **up-take** is due to the fact that it is a requirement in the national contract for GPs AND driven by GPs for GPs.

Source: [www.dak-e.dk/flx/en/general-practice](http://www.dak-e.dk/flx/en/general-practice)

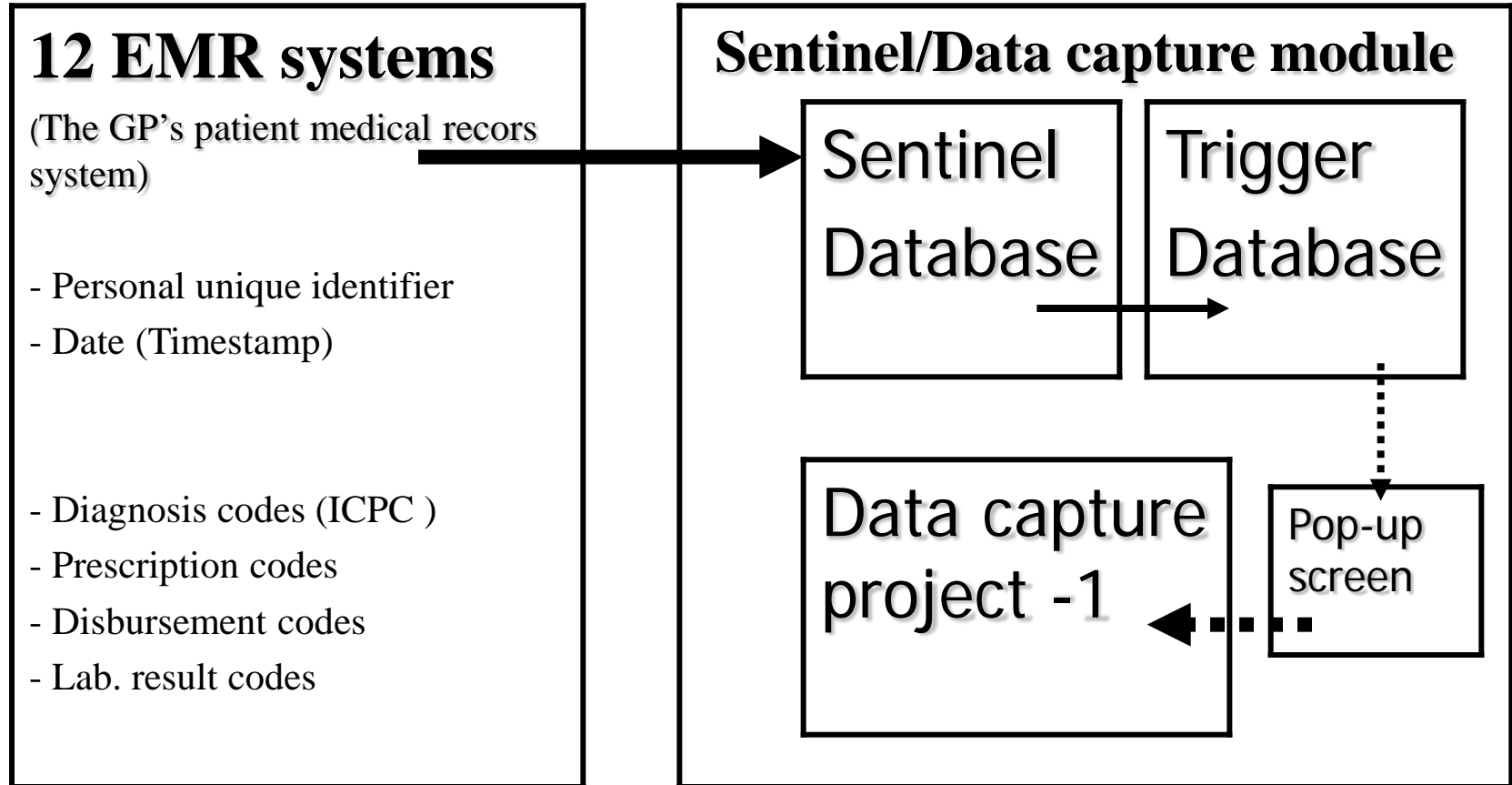
# Denmark has the worlds' most "computerised" general practice



All GPs have an electronic medical record system.

However, 12 different systema are used

# Data capture in general practice



Data are transferred automatically from the EMR system to the Danish General Practice Database. The denominator (number of patients) is also captured.

# Example of feedback report from Data Capture for diabetes

1. The examples shows the feedback quality reports that GPs can receive if they ICPC code and participate in the Data Capture registration.

2. *Chronic diseases: The report on chronic diseases is divided into two parts.*

*The 1st part displays an overview of the GP's patient population along with relevant data for every patient.*

*The 2nd part shows the GP's data compared with data from other GPs on local and/or national level*

3. It opens **for risk stratification** according to for instance the Stanford Chronic Care Programme

4. It has been shown that electronic feed back of the nature in the example significantly improves quality regarding processes of care.

(Guldberg et al: Improved quality of type 2 diabetes care following electronic feedback of treatment status to general practitioners: a cluster randomized controlled trial. *Diabet Med* :325-32)

# Sentinel Datafangst

Patients with Diabetes M

Benchmark page 1

Benchmark page 2

## Patients with Diabetes Mellitus. (Constructed/anonymous name list)

How to read data

Improve quality

Print this page

51 patients out of 1719 patients (3.0 %)

Data extracted: Thursday 25 February 2010 10:53:53

First Name	Personal id	Age	HbA1c	Treat-ment given as	S-Chol	U-Alb	Lipid lower <sup>1</sup>	ACE/ Ang II inhib <sup>1</sup>	BP	Drugs for BP	BMI	Smok-ing	Last GP	Re-spons-ability	Birth month	Last annual control
Allan	190235-xxxx	75			6.2					0			bt		2	
Anders	070278-xxxx	32								0		no	mvw	GP	2	4 jan 2008
Bent	030221-xxxx	89	0.063		5.5↓	14.5			125/65	0	20		wrbaa	GP	2	
Bente	150268-xxxx	42	0.070		4.7			yes	148/89	2			bt	GP	2	
Birgit	150846-xxxx	63	0.082	p	2.9	1.9	yes	yes	130/90	2	30	no	bt	GP	8	14 dec 2009
Birthe	230557-xxxx	52			4.1↓		yes			0	15		is		5	
Bjarne	050942-xxxx	67	0.078	p	4.7	3.1	yes	yes	150/80	1	35		bt	GP	9	
Brian	201166-xxxx	43			5.4				105/75	0			bt		11	
Camilla	231175-xxxx	34	0.068↓		3.3↓	*			130/80	0	30		bt	hosp	11	
Carsten	060840-xxxx	69		i			yes	yes	130/80	2			bt	hosp	8	
Charlotte	170730-xxxx	79	0.058		4.1↑		yes		105/60	1			bt	GP	7	
Christian	231035-xxxx	74	0.067	i	2.8		yes	yes	133/73hj	3			bt	hosp	10	
Claus	140533-xxxx	76	0.065↓		4.9↓	*			150/85	0	32	yes	bt	GP	5	13 mar 2009
Erik	130435-xxxx	74	0.070	p	3.0	*	yes	yes	145/70	1	36	yes	bt	GP	4	17 jun 2009
Finn	090459-xxxx	50	0.048↑		4.1↓	*		yes	120/85	1	37	no	bt	GP	4	17 apr 2009
Flemming	090640-xxxx	69	0.050	p,i	4.2	3.7		yes	150/95	1	18		bt	GP	6	
Gitte	070154-xxxx	56	0.056↓		4.0	*	yes	yes	125/70	1	27	no	bt	GP	1	29 apr 2009
Hanne	230760-xxxx	49	0.061↑		4.4↑			yes	152/108	1		no	bt	GP	7	12 jun 2008
Helle	070856-xxxx	53	0.074	i	6.0↑	*	yes		170/90	1	33	yes	bt	GP	8	14 aug 2009
Henning	290444-xxxx	65	0.064↓	p	5.0		yes		130/80	0			bt	hosp	4	
Henrik	261128-xxxx	81	0.089	i	4.7↓	*		yes	130/75	2	30		bt	GP	11	6 nov 2008
Inge	280139-xxxx	71	0.076↑	p	3.5↓	*	yes	yes	150/90	2	33	no	bt	GP	1	15 feb 2010
Jan	240155-xxxx	55	0.065		5.5↑	*	yes	yes	129/81	1	27	yes	bt	GP	1	27 jan 2010
Jens	110143-xxxx	67	0.072	p	4.5	*		yes	135/85	3	26	no	bt	GP	1	16 feb 2010
Jesper	020938-xxxx	71	0.057↑		5.6↓			yes	120/70	3	27		bt	GP	9	

<sup>1</sup> Has received a prescription within the last 2 years. A star \* indicates that measurement is made, but the result is not usable. An arrow shows that there has been a change in the measured value since the previous control, green arrow indicates improvement while red arrow indicates worsening. All personal names in this demo are constructed

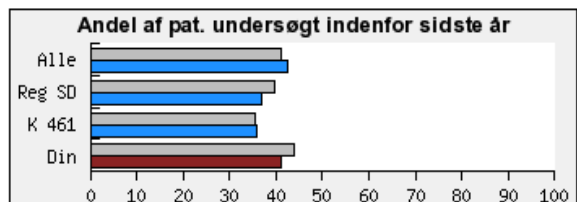
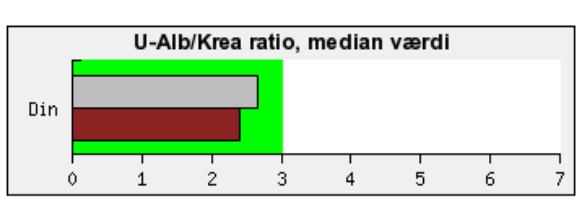
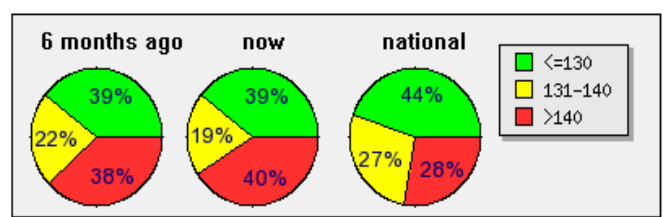
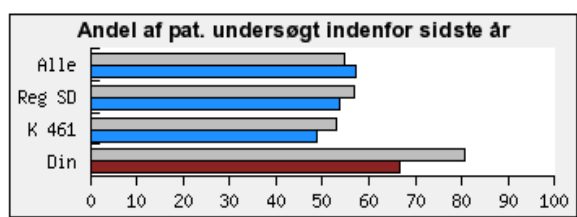
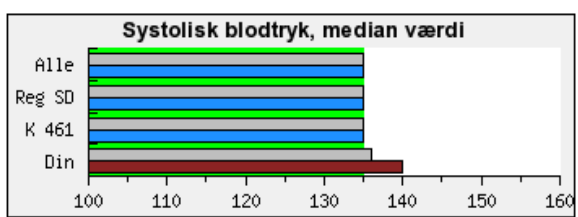
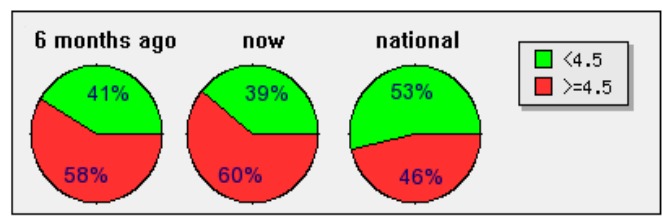
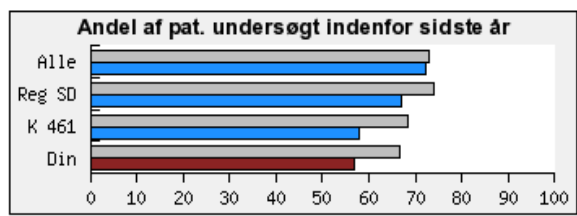
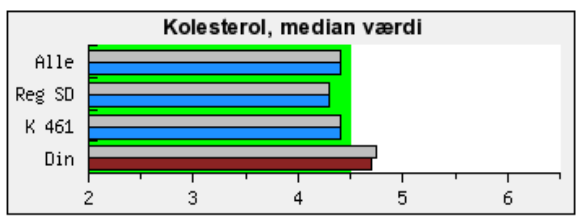
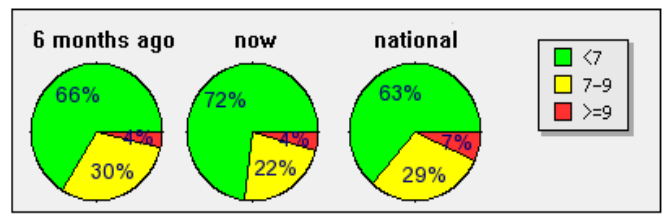
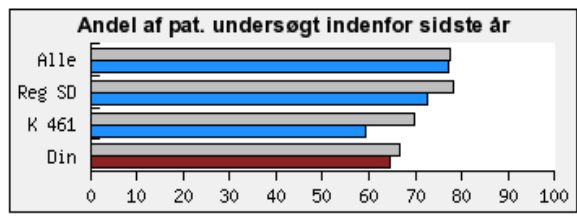
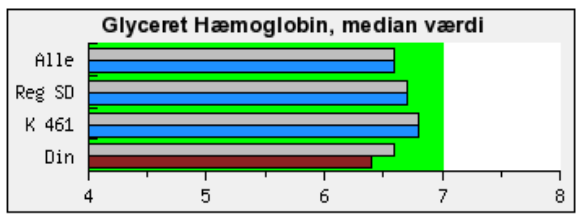
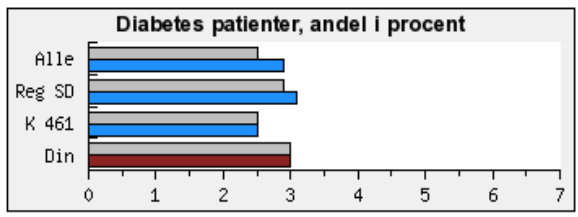
## Your Diabetes treatment in comparison with other practices

The gray bars show the value for 6 month ago.

National or regional peer-comparison

All = All patients treated by a GP who uses Data capture  
 Reg SD = Region South  
 K 461 = Municipality of Odense  
 Din = Your population

The gray bars show the values a year ago.





## **Innovation 4: Fostering innovation through targeted 'seed' money**

1. The Danish Health and Medicine Authority administers a number of targeted funds for pilot or trials within for instance obesity among children and teenagers, chronic diseases, vulnerable groups, mental health etc.
2. Funds are distributed based on application
3. The idea is basically to foster innovative approaches through 'let the 1000 flowers bloom' – pulling together results in reports containing results from the projects and the recommendations from the Health and Medicines Authority.

# Example: 100 million dollars for improved care for the chronically ill 2010-2012

 Sundhedsstyrelsen

Januar 2014

Sammenfatning af slutrapporteringer fra projekterne under puljen til den forstærkede indsats for patienter med kronisk sygdom 2010-2012

2 reports

Tematisk evaluering

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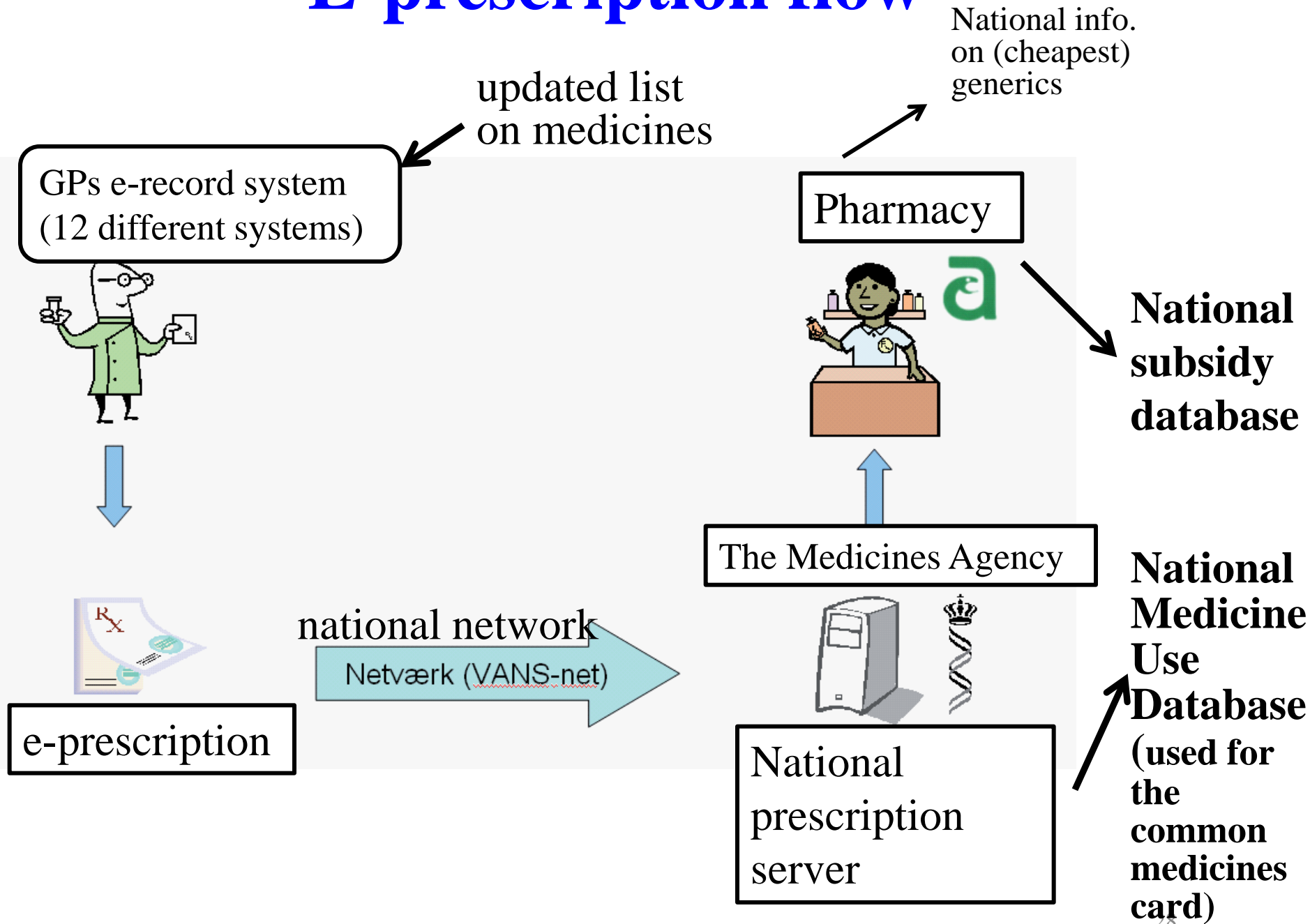
Forstærket indsats for patienter med kroniske sygdomme 2010 - 12

1. **100+ projects** covering selfcare, multiple chronic diseases, stratification patient schools, coordination of patient pathways, telemedicine etc.
2. **Strength:** Provides funds for experimental approaches  
Bottom-up approach to innovation
3. **Weaknesses:** too many small projects  
no stringent (scientific) evaluation criteria  
no requirement for knowledge sharing

## **Innovation 5: The common medicines card/database**

1. A system that gives relevant providers (GPs, hospitals, home nurses, pharmacies) access to information about prescription medicines for all citizens, i.e. ties the 3 provider sectors together along with patient access to the data.
2. AIM: To reduce medication errors and provide immediate access to current medication
3. Medication errors are a significant source of added costs
4. High degree of security around data privacy

# E-prescription flow



# e-health – e-prescribing - illustrated by my own case

det fælles medicinkort

Du er logget ind som Kjeld Møller Pedersen

Log ud

Aktuel medicin Tidligere medicin Vaccinationer Min Log

Dit medicinkort indeholder følgende:

Startdato	Slutdato	Lægemiddel	Form	Styrke	Dosering	Årsag	
18-02-2014		Lisinopril/ thiazid "Sandoz"	Tabletter	20+12,5 mg	1 tablet daglig	Mod forhøjet blodtryk	▼
18-02-2014		Amlodipin "Actavis"	Tabletter	5 mg	1 tablet daglig	Mod forhøjet blodtryk	▼

Recepter:

Filtrering

Vis recepter  
 Vis apoteksudleveringer

Oprettet	Udleveret	Lægemiddel	Form	Styrke	Dosering	Årsag	Status	
13-06-2014	14-06-2014	Lisinopril/ thiazid "Sandoz"	Tabletter	20+12,5 mg	1 tablet daglig	Mod forhøjet blodtryk	✓	▼
13-06-2014	14-06-2014	Amlodipin "Actavis"	Tabletter	5 mg	1 tablet daglig	Mod forhøjet blodtryk	✓	▼
18-02-2014	19-02-2014	Amlodipin "Actavis"	Tabletter	5 mg	1 tablet daglig	Mod forhøjet blodtryk	✓	▼
18-02-2014	19-02-2014	Lisinopril/ thiazid "Sandoz"	Tabletter	20+12,5 mg	1 tablet daglig	Mod forhøjet blodtryk	✓	▼
29-10-2013	30-10-2013	Lisinopril/ thiazid "Sandoz"	Tabletter	20+12,5 mg	1 tablet daglig	Mod forhøjet blodtryk	✓	▼
29-10-2013	30-10-2013	Amlodipin "Actavis"	Tabletter	5 mg	1 tablet daglig	Mod forhøjet blodtryk	✓	▼

Latest prescription June 2014