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Simulation Model for a Needs-Based Health Care Planning in Switzerland The Example of Coronary Heart Disease

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Research team

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Background and objectives

Background

- Contribute to discussion of appropriate medical supply with a (more) systemic approach
- Coronary heart disease (CHD) as an exemplary case
- First step: focus on demand side

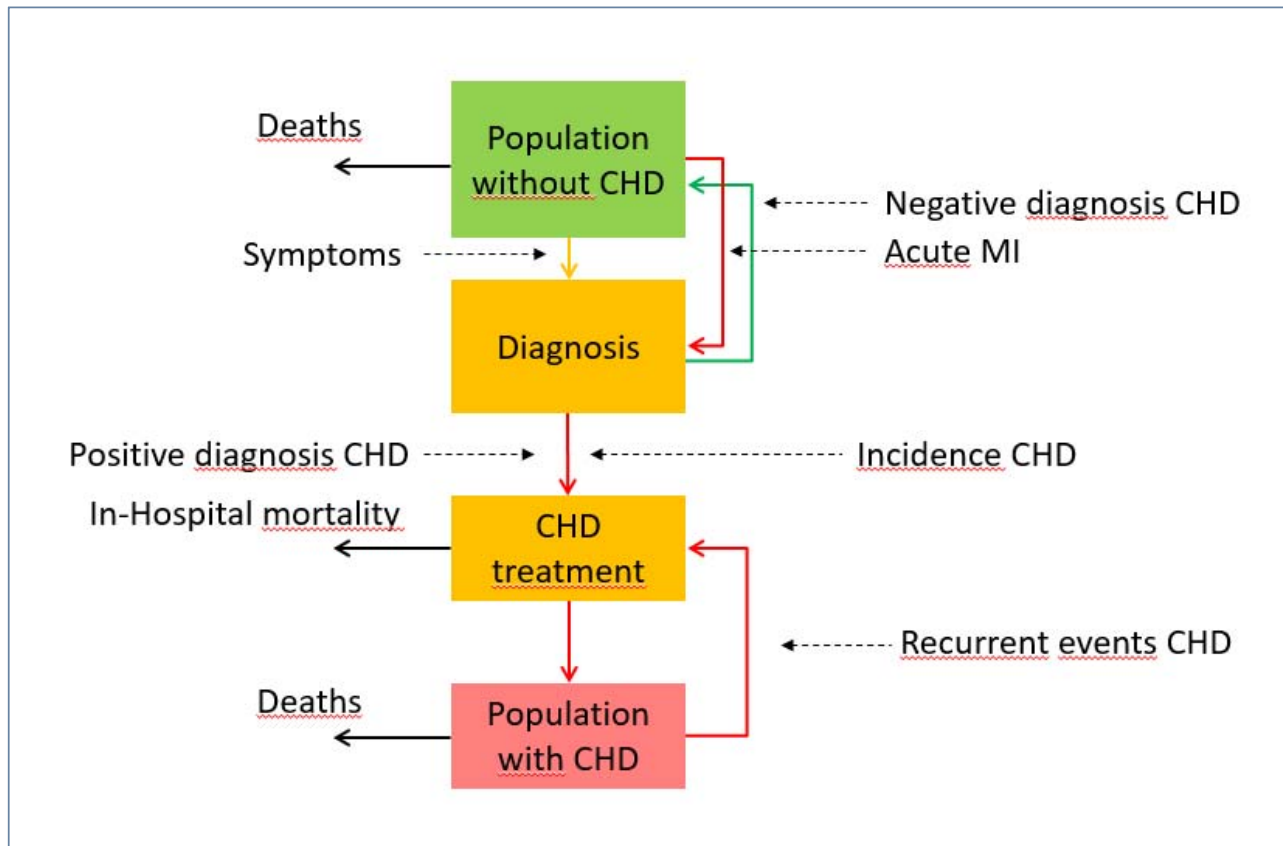
Model requirements

- Dynamic (population, ageing, technological progress and medical practice variation)
- Aggregate level (annual cohorts, risk factors)
- Relate to and integrate available empirical data

Output

- Feasibility study
- Amount of medical services for CHD in Switzerland: preliminary results for coronary angiographies and surgical treatment

Patient pathway



Patient pathway (simplified representation)

Population without CHD

Diagnostic interventions

- Negative
- Uncertain
- Positive

Invasive diagnosis CA

Acute MI

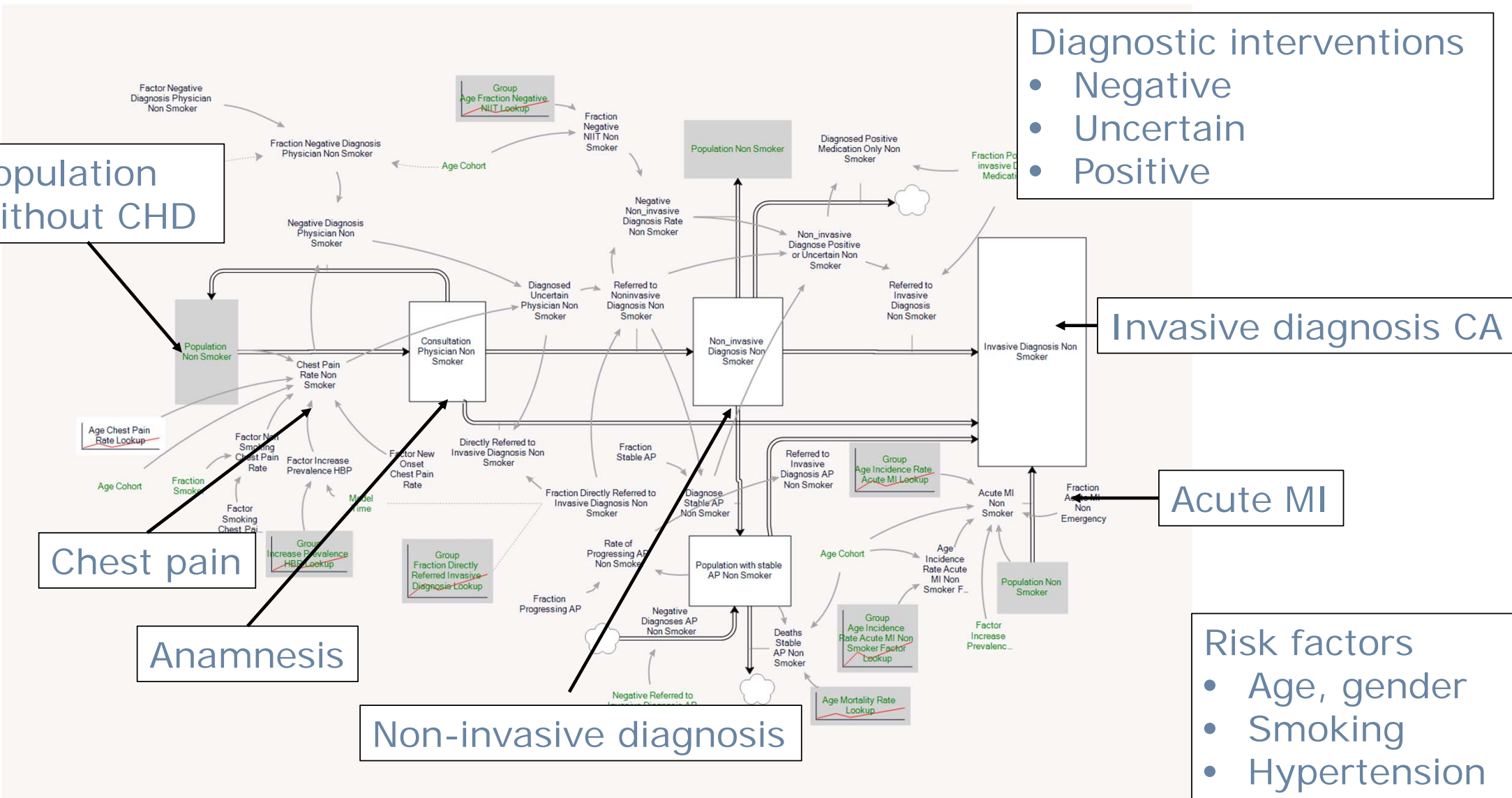
Chest pain

Anamnesis

Non-invasive diagnosis

Risk factors

- Age, gender
- Smoking
- Hypertension



Increase in diagnostic and surgical interventions

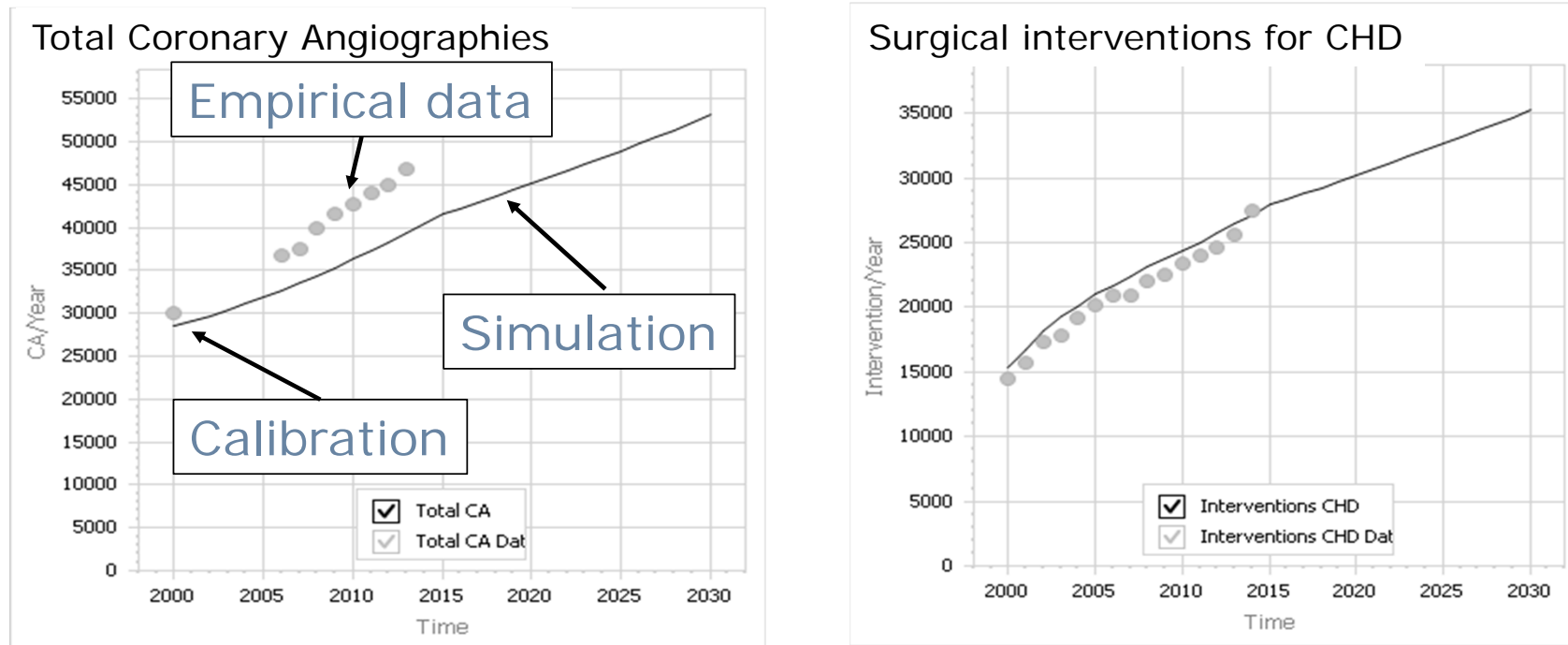
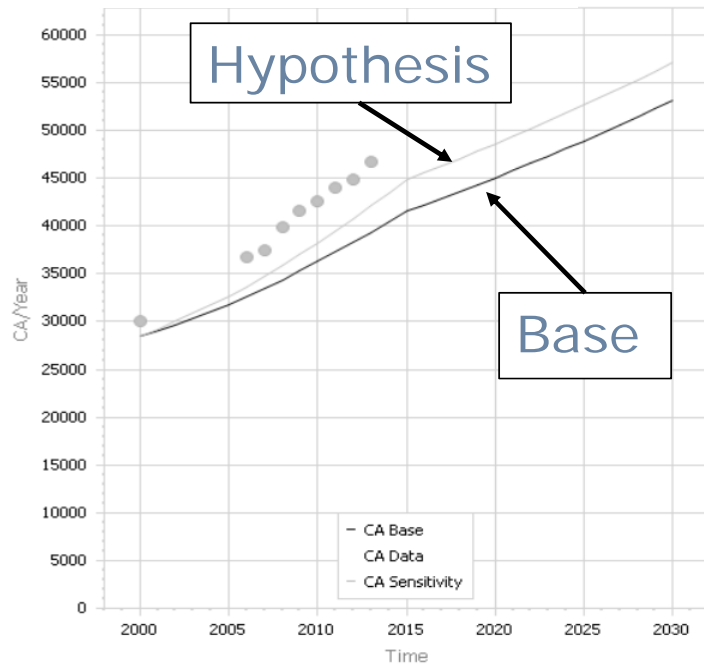


Figure 1: Simulation results versus empirical data for coronary angiographies and invasive CHD treatment in Switzerland (preliminary results: Not for citation)

Hypothesis testing: More diagnostic CA

Total Coronary Angiographies



Surgical interventions for CHD

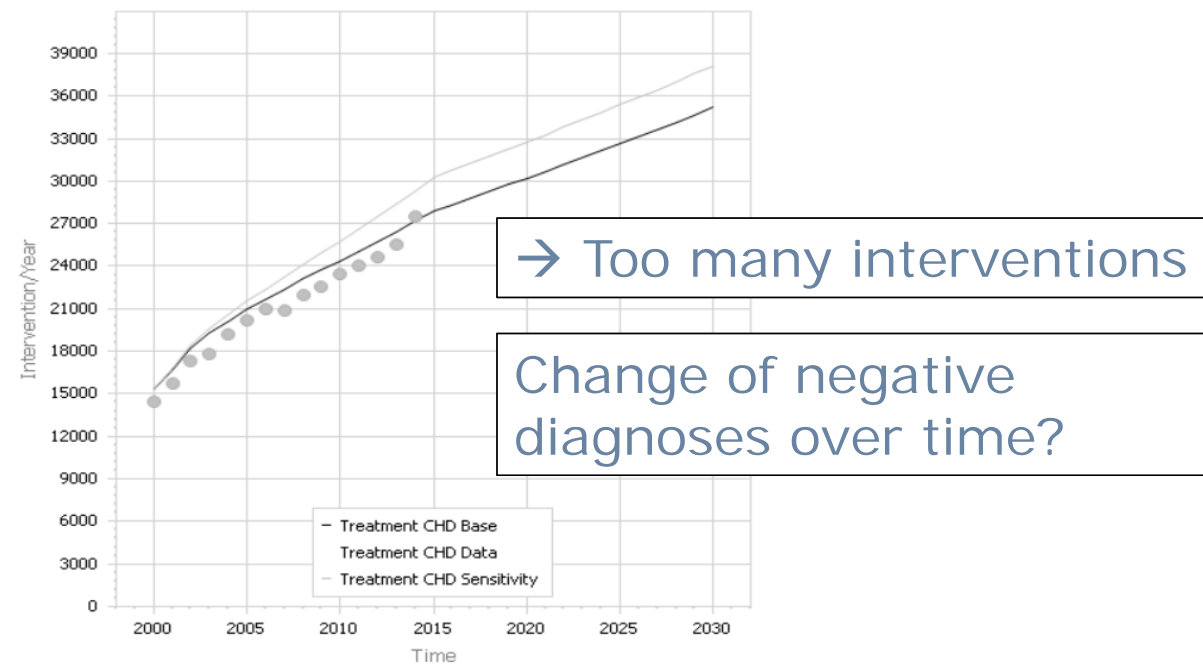


Figure 2: Effect of increase in direct referrals to coronary angiographies (preliminary results: Not for citation)

Identify relevant knowledge gaps

Parameter	Default value	Low value	High value	CA		Invasive intervention	
				Low (%)	high (%)	Low (%)	high (%)
Factor Onset New Chest Pain Rate	1.6	1.28	1.92	- 11.9	+ 11.9	- 11.7	+ 11.7
Fraction Acute MI Non Emergency	0.3	0.24	0.36	+ 2.1	- 2.1	+ 2.2	- 2.2
Fraction referred directly to invasive diagnosis	0.4	0.32	0.48	- 3.1	+ 3.1	- 4.1	+ 4.1
Fraction recurrent event (of CHD population)	0.15	0.12	0.18	- 2.5	+ 2.0	- 3.0	+ 2.6
Fraction Negative CA Recurrent Events	0.1	0.08	0.12	- 0.2	+ 0.2	- 0	+ 0
Fraction Coro Total Recurrent Events	0.1	0.08	0.12	- 2.4	+ 2.4	- 0	+ 0

Calibration

Data analysis

Practice variation

Secondary prevention and recurrent events

Table 1: Sensitivity analysis for single parameters (variation of +/- 20%)

Our contributions

- Prototype for a needs-based, dynamic analysis of health care utilization
- Integrate different/various sources of data and knowledge
- Instrument for hypothesis testing (“what – if...”)
- Exemplary application with potential for other diagnoses/diseases
- Prerequisite for a future integration of supply and demand in a integrated simulation model

Forschungsprogramm ÖGM

Weiterentwicklung des Modell des regulierten Wettbewerbs im Schweizer Gesundheitswesen:

- Rolle der Tarife und Tarifverhandlungen für die Steuerung des Gesundheitswesens
- Stärkung der Wettbewerbsdimension der Qualität
- Verbesserung der Datenbasis für Steuerung und Planung der Gesundheitsversorgung (Schwerpunkte Langzeitpflege und ambulante medizinische Versorgung)
- Auslegeordnung zur Über-, Unter- und Fehlversorgung in der Schweiz
- Steuerung und Finanzierung der Langzeitpflege in der Schweiz
- Steuerung und Weiterentwicklung der ambulanten medizinischen Versorgung
- Kompetenzaufbau bei Gemeinden und regionalen Körperschaften, um wachsenden Aufgaben in der Gesundheitsversorgung gerecht zu werden

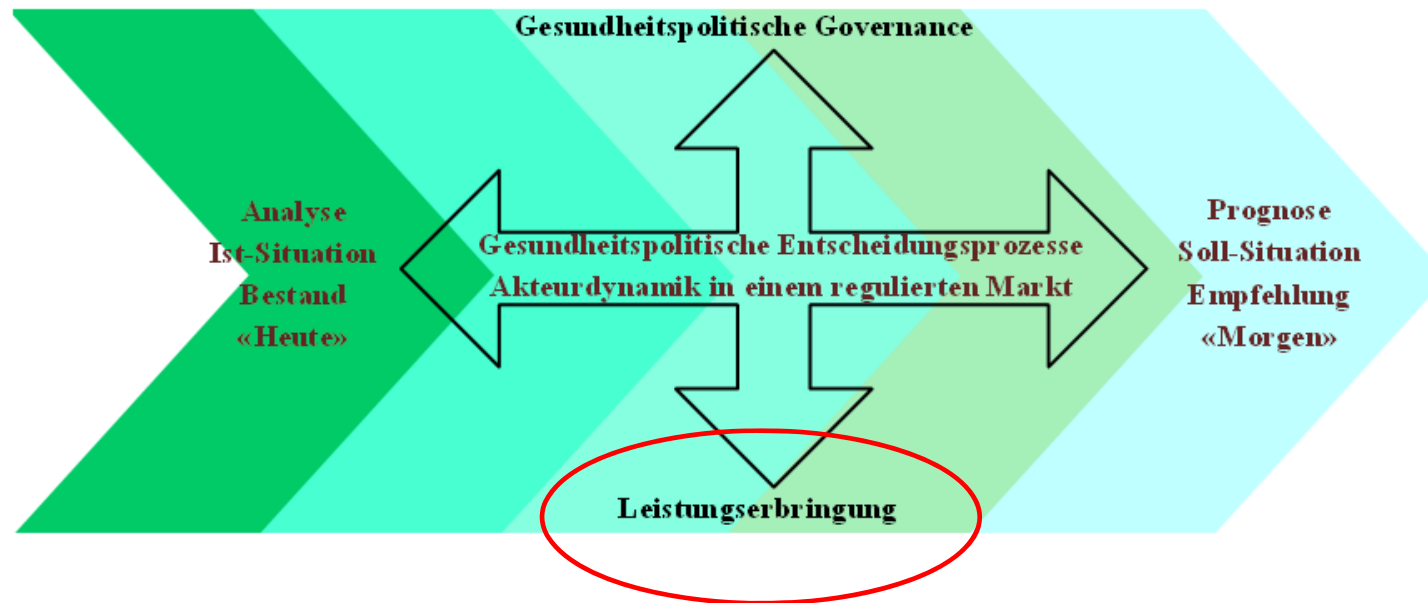
Forschungsprogramm ÖGM

Integrierte Versorgungsmodelle und Schnittstellenmanagement

- Palliative Care: Aufbau von bedarfsgerechten, regional verankerten Versorgungsstrukturen
- Krebsbehandlung (All.Can): „Improving quality of life and efficiency in Swiss cancer care focusing on regional patient pathways, its transitions, the interprofessional care-setting as well as palliative care“
- Kosten und Qualität von Ärztenetzwerken und Managed Care Organisationen
- Die Rolle der öffentlichen Hand in der Weiterentwicklung integrierter Versorgungsansätze
- Neue Angebotsformen zur Stärkung der ambulanten Versorgung
- Förderung von Gesundheitsregionen

Forschungsprogramm Öffentliches Gesundheitsmanagement

Abbildung 1: Die strategische Einbettung des Forschungsprogramms Öffentliches Gesundheitsmanagement



Thank you for your attention

