



## ABSTRACT PREVIEW

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Innovation in primary care

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### Presenter(s)

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Role: Presenter

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Role: Presenter

**Troels Kristensen**

Associate Professor

University of Southern Denmark

Role: Presenter

**Tor Iversen**

Professor

University of Oslo

Role: Presenter

### Chair/Discussant(s)

[Professor Brigitte Dormont](#) – Chair, Université Paris-Dauphine

[Professor Matt Sutton](#) – Discussant, The University of Manchester

### Primary Field

Supply of health services

- Physician's practice
- primary care

### Description of Session

One of the great health challenges for the twenty-first century is growth in the number of patients with chronic diseases both due to the aging of populations and to life-style factors. For instance, Diabetes and its complications constitutes a major threat to global public health in the 21st century. An estimated 382 million people had diabetes in 2013, and this number is expected to increase to 592 million by 2035. Mortality rates are declining, but are at least double for cardiovascular disease for subjects with diabetes compared to non-diabetic subjects.

Patients with chronic diseases need proactive support and care from many types of health care providers. Many countries aim at having primary care physicians (PCPs) as patients' coordinators to obtain high quality composition of care. Present practice is, however, variable and policymakers point out the challenge of improving primary care. For instance, the OECD-publication "Cardiovascular Disease and Diabetes: Policies for Better Health and Quality of Care" states that the importance of high quality primary care is increasing in managing cardiovascular disease and diabetes.

Although primary care is a priority among policy makers in many countries, initiatives to improve primary care quality are often scattered, unsystematic and poorly evaluated. A possible reason is that primary care is less technology-intensive compared with hospitals, making the potential for quality improvements less visible. Innovations in primary care have a broad scope with perhaps an emphasis on disease management and composition of types of personnel in addition to PCPs. This broad approach to innovation and quality improvement in primary care is the background for this organized session with two papers on composition of personnel and two papers on disease management.

Julien Mousquès makes use of data from a natural experiment in France that studies the impact of teamwork between PCPs and nurses on quality of care and services delivered for chronic patients. Mehdi Ammi investigates the mechanisms by which nurses can affect patients' experience in primary care, focusing on accessibility and appropriateness of care. He is able to distinguish between family practice nurses, specialized nurses and nurse practitioners, in a study that covers all Canadian provinces.

Troels Kristensen studies an important component of disease management. Point-of-care testing (POCT) for glycemic control (HbA1c) at the PCP office means instant test results and more coherent counseling that may improve diabetes management and reduce hospitalizations. He presents results from a natural experiment in Denmark and assesses whether the introduction of POCT of HbA1c in general practice has decreased hospital activity. With data from the entire population of PCPs in Norway, Tor Iversen presents results from a study of what kind of physician characteristics and market conditions promote and delay the adoption of disease management programs for patients with Type 2 Diabetes.

Taken together, we think the papers give some impression of the health economics research that goes on to explore the potential for quality improvements in primary care that might also have consequences for other sub-sectors of health care. In addition to having interest for policy-makers, the session will hopefully initiate discussion among the participants about the papers and the scope for improvement in the health economics research of primary care.

Each presentation will be maximum 15 minutes. Then, 25 – 30 minutes will be available for discussion. Professor Matt Sutton from University of Manchester is the nominated discussant. His discussion is supposed to initiate further questions and comments from the audience.

#### Declaration on Conflict of Interest

None to declare

#### Individual Papers

##### [The impact of team working between GPs and Nurses on quality of care and services delivered for chronic patients - Evidence from a natural experiment in General Practitioner Practice in France](#)

Julien Mousquès

#### Abstract

Compared to other countries, France has more barriers to developing team working or skill-mixing. In many countries, policies have explicitly encouraged integrated primary care systems as a way to encourage efficiency in health care provision. Finding an effective way of funding team work in primary care has long been a policy objective. Currently in most practices, physicians and other health professionals are paid by fee-for-service and then the team working is not particularly rewarded. To find new solutions, the Social Security Department scheduled the extension of a natural experiment (2011-2015) with prospective supplementary remuneration schemes in primary care for team working between General Practitioners (GPs) and nurses. This extension relies on the enrollment of 293 new GP practices (for 780 GPs) within the experiment and the payment of the salaries of 220 new nurses hired to work with them. Three levels of GPs and nurses team working or skill-mixing are experimenting for the screening and/or management of chronic patients: (1) screening of patients with type 2 diabetes (T2D) and those with chronic obstructive pulmonary disease (COPD); (2) realization of technical procedures as electrocardiogram (T2D and cardiovascular risk (CR)), spirometry (COPD) and foot examination (T2D); (3) education and counseling after GP's referral for CR and T2D patients. A broader public policy evaluation program was implemented based on mixed method design that associates qualitative and quantitative framework. In this communication, we focus on the quantitative component that aims to estimate the causal effect of the natural experiment on quality of care and services delivered for T2D and COPD patients with copayments due to their long-term chronic illness. Estimation was based on a differences-in-differences (DID) approach at the patient level using both balanced panel data from the years 2010-2015 (24 quarters) based on National Health Insurance claims linked to clinical data specific to the experiment and case-control design with 555 newly treated GPs enrolled (from the 1st quarter 2011 to the 2nd quarter 2015) and 1592 controlled GPs matched with a Coarsened exact matching procedure and their respective T2D and COPD patients. Outcomes in terms of quality of care and services delivered were assessed through standard follow-up procedures including HbA1c for T2D and spirometry for COPD patients. Our DID model is specified on a multi-period basis to measure both pre- and post- treatment trends (leads and lags) and includes time (quarter) fixed effects, GP clusters, patients random effects, vectors of constant and time variant GPs' characteristics (age, gender, group practice, location, size of patient list) and vectors of constant and time variant patient characteristics (age, gender, NHI scheme, exemption from copayments due to long-term chronic illness, complementary public health insurance for deprived population). Results will be available for April 2017. Keywords: primary care, team working, skill mixing, outcome and process assessment, quality of care, natural experiment, policy evaluation.

#### Declaration Conflict of Interest

None to declare

#### Funding Sources for Research

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##### [The influence of registered nurses and nurse practitioners on patient experience with primary care: Canadian evidence](#)

Mehdi Ammi

#### Abstract

While general practitioners remain central, nurses, whether registered nurses (RNs) or nurse practitioners (NPs), are increasingly becoming key providers of primary care services. RNs have a bachelor degree while NPs undertake additional university education to obtain expanded legislated scope of practice. Evidence of their influence on patient experience in primary care is mounting for NPs, but it is less so for RNs. We use the Canadian component of the international Quality and Costs of Primary Care 2013/14 survey to investigate the mechanisms by which nurses can affect patients' experience in primary care, focusing on accessibility and appropriateness of care. In addition to its large sample allowing to cover all types of patients visiting a primary care clinic in a variety of contexts in all ten Canadian provinces, the survey collects data at both the patient, physician and clinic level, and allows to distinguish between three different kind of nurses: family practice RNs, specialised RNs and NPs. In addition to nurses' types and full-time equivalent (FTE) numbers, we explore the role of nurse autonomy (number and type of procedures nurses perform independently) and of the effectiveness of the collaboration between health professionals, as judged by the patients. Our hypotheses are that patients visiting clinics with more nurses will report better access, even more so with NPs due to their expanded scope of practice; and that nurses who have more autonomy and work within collaborative teams will have similar influence. As patients remain accustomed to seeing a physician rather than a nurse in the Canadian context, it is unclear how their assessment of the appropriateness of care will be affected by RNs and NPs.

Depending on the outcomes, we use logit, interval or OLS regressions. Our main findings are that one of the most important predictors of patient experience is the effectiveness of the collaboration between health professionals: the probability of having sufficient opening hours increases by 4%, of easily getting an appointment by 5%, of getting a home visit by 21%, and of receiving care judged appropriate by 10%; on the other hand, nurse staffing in terms of FTE numbers has little influence by itself, however, different types of nurses influence different dimensions of accessibility. Of notice, we do not detect any association between nurse practitioners FTE numbers and access, while we find a small positive effect for family practice RNs. In fact, the association between patient experience and nurse staffing depends on the number of family physicians in the clinic. Even if modestly, patients report better experience with family practice RNs in clinics with few physicians, while a positive influence of NPs is found only in big clinics (12 physicians). Primary care accessibility is an ongoing policy issue in Canada and requires further attention. In the absence of suitable instrumental variables, our results shall be interpreted as descriptive only. Nevertheless, they underline the importance of ensuring effective collaboration across health professionals within primary care teams, and can inform decision-makers who continue to modify the recently implemented interdisciplinary primary care teams.

#### Declaration Conflict of Interest

None to declare

#### Funding Sources for Research

Financial support for the QUALICO-PC survey was provided by the Canadian Institutes of Health Information (CIHI) and the Canadian Foundation for Healthcare Improvement (CFHI). Provincial research grants were received from the Nova Scotia Health Services Research Foundation, Department of Health in New Brunswick, la Commissaire à la santé et au bien-être et la Fédération des médecins omnipraticiens du Québec, and the Health System Performance Research Network funded by the Ontario Ministry of Health and Long Term Care. The views expressed in this manuscript are those of the authors and do not necessarily represent the views of the funders.

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#### [Point-of-care testing of HbA1c in Type 2 diabetes care in general practice and the effect on hospital outpatient visits and inpatient admissions related to diabetes care: Evidence from a natural experiment in Danish general practice](#)

Troels Kristensen

#### Abstract

Purpose and setting: Point-of-care testing (POCT) of HbA1c in general practice (GP) means instant test results and more coherent counselling which may lead to improved management of diabetes patients and reduce hospitalizations. In 2008, Danish regulators created a national fee framework for the reimbursement of POCT of HbA1c in general practice. This incentive represents a natural experiment where one of the five Danish regions implemented the fee. We exploit this experiment and assess whether the introduction of POCT of HbA1c in general practice has decreased hospital outpatient visits and hospital admissions. Methods: Difference-in-differences models were applied at the GP clinic level to analyze the casual effects and event study analysis was used to visualize the effect over time. The fee was used to measure the amount of POCT of HbA1c. Outcomes in terms of diabetes patient hospital activity were assessed using three measures: 1) hospital outpatient care visits, 2) standard inpatient hospital admissions and 3) inpatient hospital admissions for ambulatory care sensitive conditions (ACSCs). The control group included clinics from the treatment region which never used POCT. Potential selection bias was addressed through GP fixed effects as well as time-varying control variables. The parallel trend assumption was visually inspected and tested. Finally, the sensitivity of our results was assessed via event history analysis and different treatment definitions. Data: Panel data collected between the years 2006-2012 for the Capital Region of Denmark based on The Danish Drug Register, The Danish Health Service Register and The National Patient Register were used to define a cohort of diabetes patients and their GP clinics. The link between the patient and the clinic was used to calculate average clinic level measures. Findings: There was no significant effect of POCT of HbA1c in general practice on hospital care in terms of reducing diabetes related outpatient hospital care visits, ordinary inpatient hospitalizations and hospital inpatient admissions for ACSCs. In a majority of the cases the parallel assumption was fulfilled. The event history analysis and different treatment definitions confirmed the robustness of the results. Conclusions: From the perspective of hospital activity, this study did not support the hypothesis that it is relevant to introduce POCT in general practice to reduce diabetes related hospital visits and admissions. Keywords: T2 diabetes, POCT, HbA1c, general practice, outpatient care, inpatient care, difference-in-difference, causal-effects.

#### Declaration Conflict of Interest

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#### Funding Sources for Research

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#### [Towards explaining technology adoption among primary care physicians](#)

Tor Iversen

**Abstract**

Background: Medical technology contributes to improved longevity and quality of life. Studies have shown that payment system, insurance coverage, and market conditions contribute to technology adoption by providers. These studies typically consider the entire health system or only the hospital sector. Technology adoption in primary care has not been studied much. This is a critical gap in the literature, especially when primary care is expected to play a crucial role for prevention and health maintenance of patients with chronic diseases, as, for instance, Type 2 Diabetes (T2D). The present study explores factors that contribute to technology adoption by primary care physicians (PCPs). More generally, we aim at a better understanding of incentives for primary care quality, as put forward in the OECD-publication, "Cardiovascular Disease and Diabetes: Policies for Better Health and Quality of Care." Theory and hypotheses: We develop a theory of technology adoption by providers based on benefit and cost. Consumers' demand for being listed with a PCP who has adopted the technology is higher than a PCP who has not. We derive the market equilibrium and comparative statics, and present hypotheses. Data and empirical methods: We test the theory with a unique data set on all PCPs in Norway. We have monthly longitudinal data between 2009 and 2014. In Norway, where each resident is listed with a PCP, more than 95% of PCPs are self-employed, and paid by a combination of capitation and fee-for-service. In 2009, a systematic surveillance program for patients with T2D was introduced. This program includes comprehensive annual check-ups and interaction with patients' electronic medical records. While PCPs have gradually adopted the program, only a quarter of PCPs are making use of it. Based on our theory, we assess factors that contribute to technology adoption by individual PCPs. We estimate hazard functions by flexible parametric survival models with cubic splines. We also estimate the extent to which technology adoption contributes to consumers' choice of PCP, by applying mixed-logit models. Results: Preliminary results show that the technology adoption hazard depends positively on the number of listed patients with T2D, on being a specialist in general medicine, and on the number of PCPs with open lists in the community. The technology adoption hazard depends negatively on the PCP's age and the distance to private specialists and hospitals. We also find that technology adoption has a small positive effect on consumers' choices of PCPs. Conclusion: The empirical results give support to the theory that market conditions affect technology adoption. Competition between PCPs and patients' access to specialists through PCPs is important.

**Declaration Conflict of Interest**

None to declare

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