

2015

# Health Economics, Management & Policy Abstracts

Fourteenth Annual International  
Conference on Health  
Economics, Management &  
Policy 22-25 June 2015, Athens,  
Greece

Edited by Gregory T. Papanikos

THE ATHENS INSTITUTE FOR EDUCATION AND RESEARCH





Health Economics,  
Management & Policy  
Abstracts

14<sup>th</sup> Annual International  
Conference on Health  
Economics, Management &  
Policy 22-25 June  
2015, Athens, Greece

Edited by Gregory T. Papanikos

---

First Published in Athens, Greece by the Athens Institute for Education and Research.

ISBN: 978-960-598-010-8

All rights reserved. No part of this publication may be reproduced, stored, retrieved system, or transmitted, in any form or by any means, without the written permission of the publisher, nor be otherwise circulated in any form of binding or cover.

8 Valaoritou Street  
Kolonaki, 10671 Athens, Greece  
[www.atiner.gr](http://www.atiner.gr)

©Copyright 2015 by the Athens Institute for Education and Research. The individual essays remain the intellectual properties of the contributors.

---

# TABLE OF CONTENTS

(In Alphabetical Order by Author's Family name)

<b>Preface</b>		<b>7</b>
<b>Conference Program</b>		<b>9</b>
<b>1.</b>	<b>Financial Protection and Catastrophic Health Expenditure in Turkey</b> <i>Dilek Aydogan, Cigdem Turkseven &amp; Volkan Cetinkaya</i>	<b>13</b>
<b>2.</b>	<b>Public Involvement in Science: Challenges and Opportunities within a Biomedical Research Centre</b> <i>Markella Boudioni</i>	<b>14</b>
<b>3.</b>	<b>What Is the Wait Worth? Early Elective Deliveries, Procedure Use &amp; Neonatal Health</b> <i>Desislava Byanova</i>	<b>15</b>
<b>4.</b>	<b>Imaging Intensity as a Measure of Cancer Care Efficiency</b> <i>Benjamin Franc &amp; David Seidenwurm</i>	<b>17</b>
<b>5.</b>	<b>Violence against Hospitals: An Escalating International Trend</b> <i>Emily Friedman</i>	<b>18</b>
<b>6.</b>	<b>Explaining Medical Disputes in Chinese Public Hospitals: The Doctor-Patient Relationship and its Implications for Health Policy Reforms</b> <i>Jingwei Alex He</i>	<b>19</b>
<b>7.</b>	<b>A Study to Assess the Workload of Lady Health Workers in Khanpur UC, Pakistan by Applying WHO's WISN Method</b> <i>Nadeem Sajjad Kayani</i>	<b>20</b>
<b>8.</b>	<b>Switching Health Insurance Plans. Results from a Survey in the Netherlands</b> <i>Christiaan Lako</i>	<b>21</b>
<b>9.</b>	<b>Evaluation on Potential and Realized Access to Village Clinics in a County of Shandong, China</b> <i>Yang Miao</i>	<b>22</b>
<b>10.</b>	<b>Demographic Changes and Elderly Care: A Community Question Facing Possible Local Responses</b> <i>Fabio Miraglia</i>	<b>23</b>
<b>11.</b>	<b>Formal and Informal Volunteering and Health in Europe</b> <i>Nunzia Nappo &amp; Damiano Fiorillo</i>	<b>24</b>
<b>12.</b>	<b>Impact of Electronic Health Records on the Hospital Bed Occupancy Rate in Surgical Units in France: Results from the E-Si (Preps-Sips) Study</b> <i>Morgane Plantier, Nathalie Havet, Pierre Biron, Nicolas Caquot, Camille Amaz, Thierry Durand, Irene Philip &amp; Lionel Perrier</i>	<b>25</b>
<b>13.</b>	<b>Health of the Elderly Precarious People and the SHARE Database: Assumptions, Reality and a Policy Perspective</b> <i>Andrej Srakar</i>	<b>27</b>
<b>14.</b>	<b>Estimate the Economic Effect of the Use of Social Networks on Cigarettes Smoking in Jordan</b> <i>Nadia Sweis</i>	<b>28</b>

---

15.	<b>Stakeholder Priorities for Future Research in the Treatment of Childhood Autism: Significant Consensus among Diverse Stakeholders</b> <i>Kathleen Thomas</i>	29
16.	<b>Measuring Low-Value Health Services Using Health Insurance Claims Data</b> <i>Junliang Tong, John Kralewski, Bryan Dowd &amp; Caroline Carlin</i>	30
17.	<b>Pneumococcal Vaccination of the Elderly in Germany: Cost-Effectiveness Analysis of Using PCV13 and PPSV23 Vaccines</b> <i>Marina Treskova &amp; Alexander Kuhlmann</i>	31
18.	<b>A Network Analysis of Physicians' Prescriptions for Endogenous Market Dynamics</b> <i>Berna Tuncay</i>	33
19.	<b>Is it Possible to Improve Health Care Quality and Save Costs? Evidence from a System Intervention in Washington State</b> <i>Thomas Wickizer &amp; Gary Franklin</i>	36
20.	<b>Analysis on Price Level and Affordability of Core Medicines in China</b> <i>Shi Yin &amp; Ying Bian</i>	38

---

## Preface

This abstract book includes all the summaries of the papers presented at the 14<sup>th</sup> Annual International Conference on Health Economics, Management & Policy 22-25 June 2015, Athens, Greece, organized by the Health Research Unit of the Athens Institute for Education and Research. In total there were 20 papers and 21 presenters, coming from 12 different countries (China, France, Germany, Hong Kong, Italy, Jordan, Pakistan, Slovenia, The Netherlands, Turkey, UK and USA). The conference was organized into seven sessions that included areas of Health Economics and other related fields. As it is the publication policy of the Institute, the papers presented in this conference will be considered for publication in one of the books and/or journals of ATINER.

The Institute was established in 1995 as an independent academic organization with the mission to become a forum where academics and researchers from all over the world could meet in Athens and exchange ideas on their research and consider the future developments of their fields of study. Our mission is to make ATHENS a place where academics and researchers from all over the world meet to discuss the developments of their discipline and present their work. To serve this purpose, conferences are organized along the lines of well established and well defined scientific disciplines. In addition, interdisciplinary conferences are also organized because they serve the mission statement of the Institute. Since 1995, ATINER has organized more than 150 international conferences and has published over 100 books. Academically, the Institute is organized into four research divisions and nineteen research units. Each research unit organizes at least one annual conference and undertakes various small and large research projects.

I would like to thank all the participants, the members of the organizing and academic committee and most importantly the administration staff of ATINER for putting this conference together.

**Gregory T. Papanikos**  
**President**





**FINAL CONFERENCE PROGRAM**  
**14<sup>th</sup> Annual International Conference on Health Economics,  
Management & Policy 22-25 June 2015, Athens, Greece**

**PROGRAM**

**Conference Venue: Titania Hotel, 52 Panepistimiou Avenue, Athens, Greece**

**Organization and Scientific Committee**

1. Dr. Gregory T. Papanikos, President, ATINER & Honorary Professor, University of Stirling, UK.
2. Dr. George Poulos, Vice-President of Research, ATINER & Emeritus Professor, University of South Africa, South Africa.
3. Dr. Paul Contoyannis, Associate Professor, McMaster University, Canada & Head, Health Research Unit, ATINER.
4. Dr. Zoe Boutsioli, Director, Health Sciences Research Division, ATINER, Greece.
5. Dr. Nicholas Pappas, Vice-President of Academics, ATINER, Greece & Professor, Sam Houston University, USA.
6. Dr. Panagiotis Petratos, Vice President of ICT, ATINER, Fellow, Institution of Engineering and Technology & Professor, Department of Computer Information Systems, California State University, Stanislaus, USA.
7. Dr. Chris Sakellariou, Vice President of Financial Affairs, ATINER, Greece & Associate Professor, Nanyang Technological University, Singapore.
8. Dr. Christiaan Lako, Associate Professor, Radboud University Nijmegen, The Netherlands.
9. Dr. Douglas E. Angus, Associate Editor & Full Professor, Telfer School of Management, University of Ottawa, Canada.
10. Dr. Apostolos Tsiachristas, Associate Editor, Academic Member, ATINER & Senior Researcher, Health Economics Research Centre, Nuffield Dept. of Population Health, University of Oxford, UK.
11. Ms. Olga Gkounta, Researcher, ATINER.

**Administration**

Stavroula Kyritsi, Konstantinos Manolidis, Katerina Maraki & Kostas Spiropoulos

**Monday 22 June 2015**

(all sessions include 10 minutes break)

**09:00-09:30 Registration and Refreshments**

**09:30-10:00 (ROOM A) Welcome & Opening Remarks**

- Dr. Gregory T. Papanikos, President, ATINER & Honorary Professor, University of Stirling, UK.
- Dr. Paul Contoyannis, Head, Health Research Unit, ATINER & Associate Professor, McMaster University, Canada.

**10:00-11:30 Session I (ROOM A): Hospital Care**

**Chair:** Olga Gkounta, Researcher, ATINER.

1. \*Emily Friedman, Assistant Professor, Boston University, USA. Violence against Hospitals: An Escalating International Trend.
2. \*Jingwei Alex He, Assistant Professor, Hong Kong Institute of Education, Hong Kong. Explaining Medical Disputes in Chinese Public Hospitals: The Doctor-Patient Relationship and its Implications for Health Policy Reforms.
3. Morgane Plantier, MPhil Student, University of Lyon, France, Nathalie Havet, Associate Professor, University of Lyon, France, Pierre Biron, Clinician, Cancer Centre Leon Berard, University of Lyon, France, Nicolas Caquot, Finance Director, Cancer Centre Leon Berard, University of Lyon, France, Camille Amaz, Statistician, Cancer Centre Leon Berard, University of Lyon, France, Thierry Durand, Director, Cancer Centre Leon Berard, University of Lyon, France, Irene Philip, Director, Cancer Centre Leon Berard, University of Lyon, France & Lionel Perrier, Manager, Cancer Centre Leon Berard, University of Lyon, France. Impact of Electronic Health Records on the Hospital Bed Occupancy Rate in Surgical Units in France: Results from the E-Si (Preps-Sips) Study.

**11:30-13:00 Session II (ROOM A): Health Systems**

**Chair:** \*Emily Friedman, Assistant Professor, Boston University, USA.

1. \*Christiaan Lako, Associate Professor, Radboud University Nijmegen, The Netherlands. Switching Health Insurance Plans. Results from a Survey in the Netherlands.
2. Nunzia Nappo, Assistant Professor, University "Federico II" of Napoli, Italy & Damiano Fiorillo, Assistant Professor, "Parthenope" University, Italy. Formal and Informal Volunteering and Health in Europe. (Monday, 22<sup>nd</sup> of June 2015)
3. Dilek Aydogan, Assistant Specialist, Ministry of Health of Turkey, Turkey, Cigdem Turkseven, Assistant Specialist, Ministry of Health of Turkey & Volkan Cetinkaya, Ministerial Advisor, Ministry of Health of Turkey, Turkey. Financial Protection and Catastrophic Health Expenditure in Turkey.
4. Yang Miao, Ph.D, Student, University of Macau, China. Evaluation on Potential and Realized Access to Village Clinics in a County of Shandong, China.

**13:00-14:00 Lunch**

**14:00-15:30 Session III (ROOM A): Health Economics**

**Chair:** \*Jingwei Alex He, Assistant Professor, Hong Kong Institute of Education, Hong Kong.

1. Thomas Wickizer, Professor, The Ohio State University, USA & Gary Franklin, Research Professor and Medical Director, University of Washington and Department of Labor and Industries, USA. Is It Possible to Improve Health Care Quality and Save Costs? Evidence from a System Intervention in Washington State.
2. Shi Yin, Ph.D. Student, University of Macau, China & Ying Bian, Associate Professor, University of Macau, China. Analysis on Price Level and Affordability of Core Medicines in China.
3. Marina Treskova, Research Assistant, Center for Health Economics Research Hannover, Gottfried Wilhelm Leibniz Universitat Hannover, Germany & Alexander Kuhlmann, Research Group Leader, Center for Health Economics Research Hannover, Gottfried Wilhelm Leibniz Universitat Hannover, Germany. Pneumococcal Vaccination of the Elderly in Germany: Cost-Effectiveness Analysis of Using PCV13 and PPSV23 Vaccines.
4. Nadia Sweis, Assistant Professor, Princess Sumaya University for Technology, Jordan. Estimate the Economic Effect of the Use of Social Networks on Cigarettes Smoking in Jordan.

**15:30-17:30 Session IV (ROOM A): Round Table Discussion on "Health (Policy) Challenges: Country Experiences in a Global World"**

**Chair:** Dr. **Paul Contoyannis**, Head, Health Research Unit, ATINER & Associate Professor, McMaster University, Canada.

1. Dr. **Benjamin Franc**, Professor, University of California, San Francisco, USA.
2. Dr. **Christiaan Lako**, Associate Professor, Radboud University Nijmegen, The Netherlands.
3. Dr. **Jingwei Alex He**, Assistant Professor, Hong Kong Institute of Education, Hong Kong.
4. Mr. **Nadeem Sajjad Kayani**, Deputy Project Manager, Health Services Academy, Pakistan.
5. Dr. **Thomas Wickizer**, Professor, The Ohio State University, USA.

**21:00-23:00 Greek Night and Dinner (Details during registration)**

## Tuesday 23 June 2015

### 10:00-11:30 Session V (ROOM A): Women and Children in Healthcare

**Chair:** \*Christiaan Lako, Associate Professor, Radboud University Nijmegen, The Netherlands.

1. Nadeem Sajjad Kayani, Deputy Project Manager, Health Services Academy, Pakistan. A Study to Assess the Workload of Lady Health Workers in Khanpur UC, Pakistan by Applying WHO's WISN Method.
2. Desislava Byanova, Ph.D. Candidate, Brown University, USA. What Is the Wait Worth? *Early Elective Deliveries, Procedure Use & Neonatal Health.*

### 11:30-13:00 Session VI (ROOM A): Methods

**Chair:** \*Fabio Miraglia, Professor, La Mediterranea University of Reggio Calabria, Italy.

1. Benjamin Franc, Professor, University of California, San Francisco, USA & David Seidenwurm, Physician, Sutter Health, USA. Imaging Intensity as a Measure of Cancer Care Efficiency.
2. \*Markella Boudioni, Patient and Public Involvement Manager, Imperial College London, U.K. Public Involvement in Science: Challenges and Opportunities within a Biomedical Research Centre.
3. Kathleen Thomas, Research Fellow and Adjunct Associate Professor, University of North Carolina at Chapel Hill, USA. Stakeholder Priorities for Future Research in the Treatment of Childhood Autism: Significant Consensus among Diverse Stakeholders.
4. Berna Tuncay, Assistant Professor, IMT Institute for Advanced Studies Lucca, Italy. A Network Analysis of Physicians' Prescriptions for Endogenous Market Dynamics.
5. Junliang Tong, Ph.D. Candidate, University of Minnesota, USA, John Kralewski, Emeritus, University of Minnesota, USA, Bryan Dowd, Professor, University of Minnesota, USA & Caroline Carlin, Investigator, Medical Research Institute, USA. Measuring Low-Value Health Services Using Health Insurance Claims Data.

### 13:00-14:00 Lunch

### 14:00-15:30 Session VII (ROOM A): Elderly Care

**Chair:** \*Markella Boudioni, Patient and Public Involvement Manager, Imperial College London, U.K.

1. \*Fabio Miraglia, Professor, La Mediterranea University of Reggio Calabria, Italy. Demographic Changes and Elderly Care: A Community Question Facing Possible Local Responses.
2. \*Andrej Srakar, Research and Teaching Assistant, University of Ljubljana, Slovenia. Health of the Elderly Precarious People and the SHARE Database: Assumptions, Reality and a Policy Perspective.

16:30-19:00 Urban Walk (Details during registration)

20:30- 22:00 Dinner (Details during registration)

## Wednesday 24 June 2015

Cruise: (Details during registration)

## Thursday 25 June 2015

Delphi Visit: (Details during registration)

**Dilek Aydogan**

Assistant Specialist, Ministry of Health of Turkey, Turkey

**Cigdem Turkseven**

Assistant Specialist, Ministry of Health of Turkey

&

**Volkan Cetinkaya**

Ministerial Advisor, Ministry of Health of Turkey, Turkey

## **Financial Protection and Catastrophic Health Expenditure in Turkey**

Between 2002 and 2014, Turkey has implemented a remarkable health reform to improve access to health care services. As a result of this reform initiative, there has been noticeable progress in major indicators including the life expectancy, infant and maternal mortality rates. Besides these indicators, out-of-pocket (OOP) health expenditure has a significant role in assessment of health system performance especially in developing countries since OOP health expenditure can cause substantial and unexpected shocks on a household's living standards which may lead to catastrophic health expenditure. The World Health Organization defines health expenditure as catastrophic when "a household's financial contributions to the health system exceed 40% of income remaining after subsistence needs have been met" (Xu et al., 2003). In Turkey, the OOP health expenditure is 16,8% of total health expenditure and the proportion of households that incur catastrophic health expenditure is 0,22%. Lowering financial burden of health expenditure on individuals is necessary for financially sustainable health system. In this study, we examine drivers of the health service utilizations and OOP health service expenditures as well as catastrophic and impoverishing effect of health expenditures on households.

**Markella Boudioni**

Patient and Public Involvement Manager, Imperial College London,  
U.K.

**Public Involvement in Science: Challenges and  
Opportunities within a Biomedical Research Centre**

Patients and the public can bring their experience and new perspectives to biomedical research. This has been recognized and it is now a prerequisite by many funding bodies. This presentation will explore the range and diversity of activities of patient and public involvement and engagement in research across a Biomedical Research Centre (BRC), the NIHR Imperial BRC in U.K. The NIHR Imperial BRC covers many research themes; four of them are overarching, i.e. Biobanking, Imaging, Genetics & Genomics and Stratified Medicine. Public engagement, patient and public involvement activities are common but variable across these research themes and projects. Public engagement activities are frequent across the themes, e.g. participation in public showcase events and research festivals, laboratory tours for patients and the public, school outreach programmes. Patient and public involvement activities include the maintenance and development of alliances with charities and involvement of patients and the public at various stages of the research process. These may be from commenting and refinement of proposals and grant applications to reporting and dissemination of findings. The focus of this presentation will be on the challenges and difficulties, i.e. practical, cultural and communication, identified by research teams, individual researchers and members of the public alike. In addition, the opportunities that public involvement in research bring for both public and researchers will be explored. A strategy and standards to overcome some of these challenges and support both public and researchers for effective public involvement will be also presented.

**Desislava Byanova**

Ph.D. Candidate, Brown University, USA

## **What Is the Wait Worth?**

### ***Early Elective Deliveries, Procedure Use & Neonatal Health***

Over the past several decades, childbirth has been associated with a rising number of medical interventions. Both developed and developing countries are observing the increasingly active role of the obstetrician, through inductions of labor and scheduling of cesarean sections. The medical literature suggests that a large fraction of these obstetric procedures are elective, or otherwise, non-medically indicated. In this paper, I examine the common practice of elective early-term deliveries (EEDs). EEDs are non-medically indicated inductions of labor or planned cesarean sections at  $\geq 37$  and  $< 39$  completed weeks of gestation, which have been associated with an array of negative outcomes for both the mother and the infant. Some of these include higher rates of cesarean delivery, longer hospital stays, more neonatal intensive care unit (NICU) admissions, higher respiratory morbidity of the infant, and other transitional issues. In an effort to improve birth outcomes and reduce medical costs, a number of US states have taken actions to curb the practice of elective early-term deliveries. The goal of this paper is to evaluate how effective statewide initiatives have been in reducing EEDs; and if such reductions were realized, whether they were associated with improved birth outcomes. Furthermore, I also examine how physician practices have changes as a result of the interventions and whether medical cost savings are being realized.

In order to shed some light on the impact of initiatives against EEDs, I examine a statewide policy of discontinued payments to physicians and hospitals for any induction or cesarean delivery before 39 weeks gestation unless the delivery was medically necessary and properly documented as such. To establish a causal link between the policy and the outcomes of interest, I employ differences-in-differences (DD) estimation methods, in which affected and unaffected states are compared both before and after the intervention in order to isolate the effect of the intervention. The primary data source includes the 2009-2012 US live births data files. The preliminary findings suggest that the initiative under study has been effective in reducing the number of EEDs, and has led to a significant decline in the use of inductions of labor. However, contrary to expectations, the rate of scheduled cesarean sections did not decline. Similarly, the improvement in neonatal health outcomes has been more modest than expected. While a decline in the fraction of low-birth-weight newborns has been observed, there has

been no significant decline in the number of NICU admissions and the number of newborns with Apgar score\* less than 7. Taking these results to the cost analysis, they suggest that no significant medical cost savings were realized as a result of the policy implementation.



**Benjamin Franc**

Professor, University of California, San Francisco, USA

&

**David Seidenwurm**

Physician, Sutter Health, USA

## **Imaging Intensity as a Measure of Cancer Care Efficiency**

Health care costs in the U.S. represent a large fraction of the gross domestic product, and there is significant urgency to identify areas where limited resources may be used more efficiently. Costs related to oncology care have increased exponentially over the past decade, now topping \$2.5 trillion annually in the U.S. with per patient spending on cancer over double of that in many other high-income countries. Analyses of cancer care costs often focus on antineoplastic drugs, and evaluations of health care utilization of patients with poor-prognosis cancers often focus on invasive procedures. However, imaging is also a large driver of cost in cancer care and costs related to CT scans, MRI and PET are increasing twice as fast as the overall cost of cancer care (Lancet Oncology Commission Report 2011).

The aim of the ongoing research presented was to understand the utilization rate and overall cost of sophisticated imaging methods (CT, MRI, PET) for oncology patients during their last year of life, and to evaluate if these values differ relative to values earlier in the patients' diagnoses or between institutions. Using linked administrative databases comprised of ICD-9 and CPT coding from two hospital systems in California (U.S.), one university-based and the other community-based, a database of patients with a cancer diagnosis who had died in the hospital in the last 3 years was constructed. Total numbers of oncological-related sophisticated imaging exams were identified and total costs were calculated at intervals of 6 months, 1 year, and 3 years prior to death using RBRVS RVU values and then current Medicare conversion factors and cost estimates based on Insurance Institute commercial values. Patient-specific ratios of end of life imaging intensity were generated, comparing the imaging rates and costs incurred during the last year of life with those in a year earlier in the patient's diagnosis.

Results of this research provides an analysis of imaging-related cost in the last year of life of cancer patients relative to costs earlier in the diagnosis with a focus on differences identified between the types of hospital system or the various cancer types. The paper proposes potential uses of imaging intensity measurements to improve the understanding of resource utilization in poor-prognosis cancers.

**Emily Friedman**

Assistant Professor, Boston University, USA

## **Violence against Hospitals: An Escalating International Trend**

Although there were earlier isolated incidents, a pattern of attacks on hospitals, their staffs, and patients has been documented with civil strife in Cambodia in 1975, Croatia in 1991, and Rwanda in 1994. Physicians, nurses, other health care professionals, and patients were targeted. In some incidents, hospitals were intentionally destroyed. Since then, these attacks have escalated and have taken place in the Central African Republic, the Crimea, South Sudan, Syria, Yemen, and other locations. Most hospitals are unprepared for such violations. Indeed, in many hospitals, the security staff is not even armed. Efforts to prevent further atrocities against health care facilities have been launched by Médecins Sans Frontières (Doctors Without Borders), the International Committee of the Red Cross, and the Safeguarding Health Care in Conflict Coalition. These initiatives include seeking to enforce protection of hospitals, patients, and health care workers as detailed in the Geneva Conventions; aiding hospitals in defending themselves with construction of bunkers and provision of bomb-proof window coverings; and informing combatants of the special status of health care organizations and those who work with them under international law. The concept of “medical neutrality” - treating all of those in need, without discrimination on any basis - must be honored. Although the Crimea and Ukraine are the only European sites where attacks on hospitals have occurred, given recent violence in France and elsewhere against unprotected organizations, there is little doubt that violations of hospitals are possible, especially given their lack of security. In addition to the obvious risk to patients and caregivers, this trend represents a threat to international health care volunteerism, patient safety, and the historic role of the hospital as a sanctuary. The international health care community has an obligation to protect its own members, wherever they are, as a matter of basic ethics and human rights.

**Jingwei Alex He**

Assistant Professor, Hong Kong Institute of Education, Hong Kong

**Explaining Medical Disputes in Chinese Public Hospitals:  
The Doctor-Patient Relationship and its Implications for  
Health Policy Reforms**

Recent years have witnessed a surge of medical disputes in China, including many widely reported vicious riots, attacks, and protests in public hospitals. This is a confluence of inappropriate incentives in the health system and the resulting distorted behaviors of physicians, mounting social distrust of the medical profession, institutional failures of the existing legal framework, and several other systemic factors. The detrimental effects of the damaged doctor-patient relationship have been emerging and are calling for rigorous studies and serious policy interventions. This article seeks to explain medical disputes in Chinese public hospitals with primary data collected from a physician survey in four provinces. The survey was conducted from March to April 2014 and sampled 1,524 licensed physicians. The analysis found disturbingly wide existence of medical disputes in various forms and revealed that disputes were significantly associated with poor doctor-patient communication and rushed service as a result of overload. Disputes were not necessarily only because of medical errors but more closely related to patients' dissatisfaction with clinical encounters. This article argues that restoring a healthy doctor-patient relationship is no less important than other institutional aspects of China's ambitious health policy reform. Critical interventions are needed.

**Nadeem Sajjad Kayani**

Deputy Project Manager, Health Services Academy, Pakistan

**A Study to Assess the Workload of Lady Health Workers in Khanpur UC, Pakistan by Applying WHO's WISN Method**

**Objectives:** To estimate the workload pressure of the LHWs by applying WHO's Workload Indicators of Staffing Need (WISN) approach in Khanpur Union Council (UC).

**Methodology:** Primary data collection was done from the LHWs working in Khanpur UC, Haripur District, Khyber Pakhtunkhwa Province, Pakistan. Available working time (AWT) was calculated after excluding public holidays, annual leaves, casual leaves, sick leaves, maternity leaves, trainings attended and other authorized and unauthorized absentees. All the three workload groups i.e., a) Health services activities, b) Support activities and c) Additional activities were subdivided into smaller components based on available statistics, and data was converted into meaningful information. WISN method was applied to calculate basic staff required for health service activities, Individual Allowance Factor (IAF) and Category Allowance Factor (CAF) followed by total staffing requirement of LHWs and workload pressure for the year 2014.

**Results:** Difference between the LHW's deployed at present and required staff was an evidence that health unit was relatively overstaffed having three LHWs in surplus compared to LHW staffing requirement. WISN ratio measure came out to be 1.20 which showed that LHWs staffing requirement and workload were not in balance in Khanpur UC. WISN results showed relatively less workload on LHWs i.e. -19.89%. It was found that 13 LHWs can perform the same amount of work assigned to 16. Balance between work and time ratio can be achieved either by redistributing three out of 16 LHWs in the un-served parts or by increasing the number of household from 07 to 09 per day.

**Conclusions:** This will help in fulfilling the unmet health services requirement of the un-served populations. Demand to cover the whole UC can be met by adding only 05 additional LHWs instead of 09. In this way, primary health care can be promoted through equal distribution of LHWs among population of Khanpur, UC to carry out the activities identified by the experts working group. Based on the findings of the study, it is recommended to carry out workload calculation of all LHWs in all UCs in Pakistan for appropriate workload and human resource distribution.

**Christiaan Lako**

Associate Professor, Radboud University Nijmegen, The Netherlands

## **Switching Health Insurance Plans. Results from a Survey in the Netherlands**

Scientific literature suggests that switching health plans is complicated, not always possible, and often overwhelming to consumers. Price does not always determine choice and quality is very hard for consumers to understand. Nevertheless, patients are often considered as rational consumers making the best choice for good quality of care. There is little evidence that consumers switch plans on the basis of critical reflection and assessment of information about quality and price.

The study is designed to study whether vulnerable consumers less frequently switch health insurance plans than the remaining consumers and to contribute to knowledge about what motivates consumers who choose to switch health plans. Results from a random sample nationwide survey (n=16779) in the Netherlands are reported here. They suggest that switching health plans is less prevalent among the elderly, those with low incomes, with chronic diseases, without a job and without access to internet. The differences in switching might be explained by various psychological factors including loss aversion, status quo bias, omission bias, lock-in-effect and the endowment effect. The new data reported here confirm the importance of switching in a free-market-health insurance system. Switching might prompt health insurers to improve health care only for those switching health plans. This might contribute to a deteriorating position of the vulnerable consumers. This is not what policy makers expected and might result a less efficient health insurance market system. It might also result in greater inequalities in the health care system in Western countries.

**Yang Miao**

Ph.D, Student, University of Macau, China

## **Evaluation on Potential and Realized Access to Village Clinics in a County of Shandong, China**

Adequate access to village clinics is of great importance for local people's health in rural areas of China. As geographical availability of village clinics is often used to estimate potential access, the actual utilization of the available village clinics is usually less known. The objectives of this study were to examine the potential and realized access to village clinics in a county of Shandong province in China, by measuring the geographical availability, the potential accessibility, and the realized accessibility to village clinics. A total of 230,966 outpatient prescriptions from all the village clinics in this county in July 2011 were collected and analyzed. Realized accessibility was measured by the shortest walking time that patients listed in the prescriptions took to the paired clinics. While potential accessibility was measured by the shortest walking time from the residence of local people to the nearest village clinics.

The analyses showed that among the 1,260 administrative villages in the county, 498 (39.52%) villages had village clinics. The number of village clinics per town, per square kilometer, and per 1,000 population averaged at 0.39, 0.27 and 0.47, respectively. All these statistical results were lower than the provincial and national levels. And the estimation on potential accessibility showed that 873 (69.29%) administrative villages had the nearest village clinics within 15 min walking distance. This number was also lower than the estimation for rural areas of eastern China. As for the realized accessibility, among the 230,966 patients, including 57.55% chose clinics in their own villages, a total of 73.76% patients visited clinics within 15 min walking distance. While about 10.82% patients chose clinics other than those in their own villages, among them, 3.50%, 3.43%, 2.20% and 1.70% patients, respectively, visited clinics within 15, 30, 60 min or over 60 min walking distance.

As a conclusion, local government and policymakers should recognize the shortage of village clinics in this county. Besides increasing the number of village clinics, attentions should also be paid to quality of service and insurance, so as to improve the real access of health care services to local population.

**Fabio Miraglia**

Professor, La Mediterranea University of Reggio Calabria, Italy

## **Demographic Changes and Elderly Care: A Community Question Facing Possible Local Responses**

**Background:** National health care system is today involved in major challenges, as the population is ageing, health care is not only increasingly effective but also more expensive, and patients, having become true consumers, are also more demanding.

**Objective:** A preparatory theoretical analysis based on the systemic “emergencies” in policies for elderly care affected by demographics **to evidence** difficulties in comparing the existing national systems and their typology framework to be seen in the context of public political categories; **to analyze** the role of the institutions in public political economy interventions; **to facilitate** the incorporation of European political standards into the progressive homologation of national policies.

**Methodology:** Systematic and targeted literature reviews; Comparison of national systems through two principal perspectives: 1. Probability of coercion/coercion level of applicability (T.J.Lowi 1972); 2. Costs/Benefits (J.Q.Wilson (1980); Focus on policy instruments; Introduction of the “expression policy space”; European community new program 2014-2020 evidencing resilient health systems.

**Results:** A synopsis is presented concerning the relationship between local layouts of the Italian sanitary system and local public politics guidelines. Policies aimed at the slowdown/reverse of the dynamics induced by both the economic crisis and the European demographic changes can be influenced by some macro-typology policies as family policies; development management and employment policies; welfare mix polices.

**Conclusion:** results are the basis of an ongoing research aimed at the individualization of adaptive models of transition, that means ideal layouts of institutions and of material and immaterial local infrastructures. The hope is that the emergent European politics must be applied for the construction of a place based development (specifically referring to the particular Italian dichotomy between north and south and between metropolis and inland areas.

**Nunzia Nappo**

Assistant Professor, University “Federico II” of Napoli, Italy  
&

**Damiano Fiorillo**

Assistant Professor, “Parthenope” University, Italy

## **Formal and Informal Volunteering and Health in Europe**

Volunteering is a pro-social activity, which people undertake of their free will without asking for monetary compensation in return. There is a well-established relationship between volunteering and health (Borgonovi 2008). Volunteers are more likely to enjoy good physical and mental health, have lower rates of mortality than non-volunteers, and declare better self-reported health (Musick and Wilson 2008). This paper studies the relationship between formal and informal volunteering and health across 13 European countries, including Nordic Countries, Continental Countries and Mediterranean Countries among which Greece. When motivations, which push people to volunteer, are largely fulfilled, volunteering can affect positively health. Since interpersonal contacts matter for health, first, we run our models only on standard control variables, and then we add relationships with family and friends, participations in several kinds of associations and cultural participation - all platforms for the production of social relations. The econometric analysis employs data provided by the 2006 wave EU-SILC micro data. Results show that formal volunteering has a significantly positive association with selfperceived health in Finland and the Netherlands, significant negative relationship in Belgium, but none in the other countries. By contrast, informal volunteering has a significantly positive correlation with self-perceived health in France, the Netherlands, Spain, Greece and Portugal, and a significantly negative relationship in Italy. Our results point out that although formal and informal volunteering are correlated one with another they represents different aspects of volunteering whose correlations with self-perceived health depend, among others, on social and cultural characteristics of each country.



**Morgane Plantier**

MPhil Student, University of Lyon, France

**Nathalie Havet**

Associate Professor, University of Lyon, France

**Pierre Biron**

Clinician, Cancer Centre Leon Berard, University of Lyon, France

**Nicolas Caquot**

Finance Director, Cancer Centre Leon Berard, University of Lyon,  
France

**Camille Amaz**

Statistician, Cancer Centre Leon Berard, University of Lyon, France

**Thierry Durand**

Director, Cancer Centre Leon Berard, University of Lyon, France

**Irene Philip**

Director, Cancer Centre Leon Berard, University of Lyon, France  
&

**Lionel Perrier**

Manager, Cancer Centre Leon Berard, University of Lyon, France

**Impact of Electronic Health Records on the Hospital Bed  
Occupancy Rate in Surgical Units in France:  
Results from the E-Si (Preps-Sips) Study**

**BACKGROUND:** Health information systems are being increasingly adopted in healthcare systems worldwide. In France, the “Hôpital numérique 2012-2017” program was implemented as a strategic plan for the modernization of health information technology. With significant upfront and ongoing investments, it is important to assess this system in terms of hospital performance. The aim of this study was to evaluate the impact of electronic health records (EHRs) on the acute care hospital bed occupancy rate in surgical units across France.

**METHODS:** This retrospective study was based on four national databases: oSIS (observatoire des systèmes d’information de santé - 2012), IPAQSS (indicateurs pour l’amélioration de la qualité et la sécurité des soins - 2012), Hospidiag (French hospital performance indicators - 2012), and the national accreditation database (2011). National data and methodological support were provided by the French Ministry of Health (DGOS) and French National Authority for Health (HAS). We used two multivariate linear models to estimate the occupancy rate of surgical inpatient beds (model 1) and the occupancy rate of surgical outpatient beds (model 2), which were dependent variables. For both models, the independent variables were the proportion of EHRs used (full, partial, or no EHRs); type of hospital (teaching, private non-profit, for-profit, or other public hospital);

---

accuracy of the care, with versus without home care hospitalization; total number of beds; and geographic region of the hospital.

RESULTS: In model 1 (n = 215 hospitals, pseudo R<sup>2</sup> = 0.28), the higher the number of partial EHRs used compared with no EHRs, the higher the occupation rate of surgical inpatient beds (p = 0.08). The occupancy rate also increased with the total number of beds (p = 0.001) and in eastern France (p = 0.001). The occupancy rate of surgical inpatient beds was lower in for-profit hospitals (p < 0.001). In model 2 (n = 217 hospitals, pseudo R<sup>2</sup> = 0.15), the higher the number of full EHRs used, the higher the occupancy rate of surgical outpatient beds (p = 0.02). The occupancy rate of surgical outpatient beds was higher in for-profit hospitals (p = 0.08) and when home care hospitalization was not offered (p = 0.008). This rate is also more important in the east (p = 0.002) and southwest (p = 0.005) of France.

CONCLUSION: We have shown that the potential benefits of EHRs are higher for outpatient units in acute care hospitals with regards to the surgery bed occupancy rate in France.

**Andrej Srakar**

Research and Teaching Assistant, University of Ljubljana, Slovenia

## **Health of the Elderly Precarious People and the SHARE Database: Assumptions, Reality and a Policy Perspective**

In this article we present the results of SHARE wave 4' dataset analysis and what it tells us about the elderly "precarious" workers and their health situation. For assessment of the health situation we use number of indicators, available in the SHARE database: self-rated health; functional limitations; objective health indicators (such as number of chronic diseases; number of medications, etc.); and accessibility of health care. In the beginning of the article we present some basic descriptive statistics and bivariate analysis results and tests, followed by the multivariate regression analysis (logistic and Firth logistic models). We use data for all 16 European countries involved in the fourth wave of this survey, with particular focus on the situation in Slovenia. Our results show that, contrary to the expectations, the health of elderly self-employed workers is generally in no way inferior to the health of elderly employees and even much better than the average health of elderly unemployed, pensioners and housewives. Problems in the health of the self-employed emerge only when the analysis changes focus to those who are neither employed nor self-employed, while engaged in paid work ("real" precarious people). The latter group does not have any observed statistically significant problems as compared to the general population 50+, while there are visible differences in the health status of employees and "real" precarious workers in almost all the indicators and in the vast majority of the 16 countries included. In conclusion, we show that the abolition of the problems of sampling using the (sample or calibrated) weighting does not show any different results. This is one of the first empirical and econometric analyses of the state of health of elderly precarious people in Slovenia and in general and has considerable implications for the planning of measures in this field: at this stage we can particularly recommend different treatment of different types of precarious work, in our case, the self-employed and the "real" precarious workers.

**Nadia Sweis**

Assistant Professor, Princess Sumaya University for Technology, Jordan

## **Estimate the Economic Effect of the Use of Social Networks on Cigarettes Smoking in Jordan**

**Objective:** To estimate the economic effect of the use of social networks on cigarettes smoking in Jordan

**Methods:** A two-part model of cigarette demand was estimated for Jordanians who are 13 years and older. We used both clustering and multistage stratified sampling techniques to select our sample.

**Results:** The overall cigarette demand price elasticity for is -0.718. The cigarette demand price elasticity for those who use social networks is -0.881, where the elasticity for those who don't use social networks is -0.445. The use of social networks is negatively related the quantity of cigarettes smoked compared to non-social network users

**Conclusions:** Social network users where more sensitive to cigarette prices than those who don't use social networks. The use of social networks might be a substitute for smoking in developing countries. Decreasing the prices of internet use in Jordan might help in providing incentives to individuals to engage in social networks and reduce the quantity of cigarettes smoked by smokers as well as being more responsive to a smaller increases in price of cigarettes. Lack of entertainments in Jordan might explain why Jordanians engage in such an unhealthy behaviors.

**Kathleen Thomas**

Research Fellow and Adjunct Associate Professor, University of North Carolina at Chapel Hill, USA

## **Stakeholder Priorities for Future Research in the Treatment of Childhood Autism: Significant Consensus among Diverse Stakeholders**

**Research Objective:** The evidence base for how to capture stakeholder input in the knowledge development process is surprisingly underdeveloped. This study compares best-worst scaling and direct prioritization experiments regarding stakeholder priorities for autism research.

**Study Design:** A survey instrument was developed from stakeholder input and fielded among a national convenience sample of autism stakeholders including adults with autism, parents, providers and researchers (n=200). Research needs were characterized in terms of nine attributes that describe how stakeholders value future research. Multivariate regression and summary statistics characterize rankings of attributes and priorities for future research and differences by method and stakeholder characteristics.

**Principal Findings:** The best-worst scaling and direct prioritization experiments identified the same top priority for future autism research: research to develop better information on treatment effect modifiers, the child, family, and intervention characteristics that lead to the best (and worst) outcomes. The methods diverged ( $r=-0.04$ ,  $p=0.89$ ) on lower priorities. Both methods yielded consistent results regarding the valued attributes of research ( $r=0.74$ ,  $p=0.02$ ). Stakeholders selected the proportion of children with autism affected by the research, family out of pocket costs for the treatment, and whether or not the treatment addresses multiple aspects of autism in an integrated manner as the most valued attributes. Adults with autism also valued treatment developed for older children while others emphasized treatment that addresses common co-occurring disorders such as seizures or anxiety. Stakeholders found the discussion of research attributes engaging. Acceptability of the instrument did not vary by stakeholder type.

**Conclusions:** Best-worst scaling exercises were easier to understand and yield more nuanced information. The study produced quantitative measures of valued attributes of future research and of stakeholder differences of opinion. Eliciting stakeholder priorities for future research investment through best-worst scaling is a meaningful exercise that should be extended to other realms of mental health research.

**Junliang Tong**

Ph.D. Candidate, University of Minnesota, USA

**John Krlewski**

Emeritus, University of Minnesota, USA

**Bryan Dowd**

Professor, University of Minnesota, USA

&

**Caroline Carlin**

Investigator, Medical Research Institute, USA

## **Measuring Low-Value Health Services Using Health Insurance Claims Data**

**Objectives:** Overuse of health services is increasingly recognized as a problem that affects both the quality and costs of health care. An important next step to measuring low-value services is identification of appropriate datasets. Our study evaluated the potential of using health insurance claims data to document the use and associated spending of services not recommended by medical guidelines.

**Methods:** Claims data from an Upper Midwest United States health insurance plan with 1.6 million enrollees were analyzed to determine the potential for quantifying the use of procedures not recommended by medical guidelines. The procedures included: 1) Imaging studies for acute non-specific low back pain, 2) Pap-test cervical cancer screening for women younger than 21 years, 3) Prostate-specific antigen screening for prostate cancer for men older than 75 years, and 4) Screening colonoscopy for adults older than 75 years. The number of enrollees at risk and the prevalence of procedures performed during 2011 were documented with magnitude of procedures allowed and their immediate costs.

**Results:** The overuse of studied medical procedures was found to be less than recent national estimates and most of the overuse was for low cost items. Only 4% of the patients with low back pain received an MRI within six weeks of diagnosis. PSA tests for men over 75 years old were somewhat higher (8%), but the unit cost for these procedures was only \$27. Three percent of enrollees over 75 years old had colonoscopies and inappropriate Pap tests were about 2%.

**Conclusions:** Our study demonstrates that health insurance claims data can be an important and low-cost source to measure the magnitude of low-value services. An additional advantage of claims-based analysis is that the influence of patient and provider characteristics can be analyzed and appropriate clinical and policy interventions can be developed.

**Marina Treskova**

Research Assistant, Center for Health Economics Research Hannover,  
Gottfried Wilhelm Leibniz Universitat Hannover, Germany

&

**Alexander Kuhlmann**

Research Group Leader, Center for Health Economics Research  
Hannover, Gottfried Wilhelm Leibniz Universitat Hannover, Germany

**Pneumococcal Vaccination of the Elderly in Germany:  
Cost-Effectiveness Analysis of Using PCV13 and PPSV23  
Vaccines**

Background: The Standing Committee on Vaccination (STIKO) in Germany currently recommends to vaccinate children with PCV13 and people 60 years and older with PPSV23. Since PCV13 has also been approved for individuals 50 years and older the question of using PCV13 for the elderly arises.

Objective: The objective of this study is to assess the cost-effectiveness of four vaccination scenarios for adults 60 years and older in Germany: no vaccination, vaccination with PCV13, vaccination with PPSV23 and sequential vaccination with PCV13 and PPSV23.

Methods:

1. A mathematical model is developed to describe pneumococcal transmission and carriage. The model is of susceptible-infected-susceptible type and comprises of ordinary differential equations which determine the dynamics of the infection between compartments across age- and pneumococcal serotype groups.
2. Model parameters are based on German data and retrieved either from the literature or obtained using fitting procedures.
3. The transmission model reflects the impact of children vaccination (indirect herd effects, replacement diseases) on the incidence and the serotype mix among adults and simulates the effects of a vaccination of the elderly for the four scenarios.
4. A health economic model is built to compute the incremental cost-effectiveness ratios (ICER), costs per QALY gained for the scenarios.
5. A sensitivity analysis is performed to test the parameter uncertainty and to provide a range of possible outcomes.

Results: The ICER of PPSV23 vs. no vaccination is € 32,700 / QALY. The vaccination with PPSV23 dominates the vaccination with PCV13. The sequential vaccination with PCV13+PPSV23 is not cost-effective versus the vaccination with PPSV23. The main reason of inefficiency of

the vaccination with PCV13 or PCV13+PPSV23 is a sharp decline of the PCV13-serotypes among the adults induced by the indirect herd effects of the infant vaccination with PCV13. Although the efficacy of PPSV23 is uncertain, the sensitivity analysis confirms the main results.



**Berna Tuncay**

Assistant Professor, IMT Institute for Advanced Studies Lucca, Italy

## **A Network Analysis of Physicians' Prescriptions for Endogenous Market Dynamics**

In this paper, we discuss a few streams of research in which we can apply the theory of complex networks and econometric modeling to the co-prescription data by physicians in Salerno, Italy (Cavallo *et al* 2013). The co-prescription data lists drugs that are prescribed to the same patient at the same time, and allow us to determine a wide range of properties of the networks of pharmaceuticals, human disease, and the interplay between them. There is a huge effort in pharmaceutical industry to find synergistic drugs (i.e., drugs in combination increase one other's efficacy, an obvious example of complementarity), and often synergistic pairs lead to a new patent. We potentially identify drug groups that work well together or that are interchangeable (complementary and substitutable drugs, respectively) and compare them to the static ATC classification system as well as quantify the heterogeneity of the prescription habits of doctors. Each non-generic (called an originator) drug is identifiable by a brand name and an ATC code, the active chemical compound, and the ICD classification of the disease upon which the drug acts. The influences of regulatory and moral hazard components lead to a complex decision space when doctors prescribe specific drugs within complementary or substitutable drug classes for patients. This decision will optimally be made by determining the best outcome for the patient, but in many cases it may not be self-evident if one originator (or generic) is clearly preferable to all others for the patient.

In health care, physicians serve as agents who make decisions on behalf of patients by providing diagnoses, treatments and drug prescriptions. Conceptually and ideally, physicians would be the perfect agents for their patients, making decisions in the way that patients would choose if they were fully informed about treatment appropriateness. However, in the real world, as the result of asymmetric information between physicians and patients, physicians may act as imperfect agents due to conflicts of interest. We look at if physicians make their decisions on a discretionary basis and before they make their decisions take into consideration what part of the costs are to be borne by the patient and by the government, respectively. Financial incentives affect a physician's prescription decision on the choice of generic versus brand-name drugs and the physician acts as an imperfect agent due to conflicts of interest and asymmetric information.

We investigate the effect of the profit margin between the reimbursement and the acquisition price upon the physician's decisions. The government pricing policy affects the level of the discount rate that the pharmaceutical manufacturers offer to providers. We explicitly examine the relationship between the prescription rate for generic drugs and the reimbursement price level or the discount rate (as reimbursement prices are reduced to control rising health care expenditures). Generic-to-brand discount ratios increase as more firms enter the market, and the generic-to-brand profit ratio increases with the degree of market competition. Generic drugs are expected to be more commonly prescribed as the number of pharmaceutical firms competing in identical therapeutic market increases, because when the ratio of co-payments for brand name to generic drugs is high, physicians may be more likely to prescribe generic drugs. We aim to contribute to the growing body of literature that explains the determinants of physician prescription choices between different versions of the same drug.

A limitation of literature is that existing papers examine the prescription choice between brand-name and generic drugs in a static context by assuming that the number of products available in the market is exogenously determined. In fact, the generic entry is a dynamic process according to which an increase in market size, such as knowing that physicians will prescribe more generics, induces more generic entry. We use the doctor co-prescription dataset from Salerno Italy, which lists the prescription history (around one million prescriptions) of a hundred GPs, including patient ages and genders, drug prices, and drug classifications. We link the co-prescription dataset with the IMS database, which provides information on patent expiry, launch dates, quality and competition characteristics of each product. This data allow us to detect complementary and substitutable drugs by detecting network motifs in the co-prescription history, and determine the dynamic effects of the entry of new generics on the prices of its substitutable drugs. Our approach to studying the prescription choice between brand-name and generic drugs is to take a dynamic view by considering the effect of generic entry on the physicians prescription behavior. In addition, a better control of patient disease severity, such as using concomitant diseases, is a possible focus for this study.

We also contrast the dynamics of the prescription patterns of a new 'substitution drug' with a completely novel drug. A new substitutable drug will generally treat patient conditions in a manner doctors are already familiar with. Drugs without any potential substitutes could be heavily prescribed initially because they treat new diseases or old diseases in a unique way, but it may also be that doctors that are

unfamiliar with the drug and its side effects could avoid prescribing it heavily immediately after its launch. By examining the co-prescription habits of the doctors temporally after a launch date, it is possible to determine fundamental differences between novel and substitutable drugs. Using both the ATC3 classification system as well as our own classification of groups of substitutable drugs, we adopt an econometric methodology sketched by Broda and Weinstein (2006) to assess the 'benefits' of imposing or removing regulation. That is, for example, how lower the price has to be in order to increase volumes of consumption after considering interdependencies among markets. What is the 'class' of patients that would benefit more from a change in regulation?

**Thomas Wickizer**

Professor, The Ohio State University, USA

&

**Gary Franklin**

Research Professor and Medical Director, University of Washington  
and Department of Labor and Industries, USA

## **Is it Possible to Improve Health Care Quality and Save Costs? Evidence from a System Intervention in Washington State**

One of the critical challenges facing the US health care system, and other health care systems as well, is the need to improve health care quality and outcomes while containing health care costs. Over the past decade, we have designed and evaluated a major health care system intervention in Washington State (WA) for health care delivered through the workers' compensation (WC) system. This intervention, started in 2002 by the Washington State Department of Labor and Industries (DLI), incorporated physician financial incentives and organizational support in the form health care coordinators, enhancements in information technology, and continuing medical education. In WA the DLI administers and regulates the workers' compensation system, which covers all work-related injuries and illnesses and expends approximately \$1.4 billion per year in medical and disability costs. Injured workers who are off work for four or more days are entitled to disability payments as long as they are receiving medical care. The DLI initiative represented a major system intervention intended to improve quality and health outcomes. In WC health care, the duration of work disability is the key outcome. Reducing work disability leads to immediate cost savings because workers no longer require disability payments. Thus, improving health outcomes by improving the quality of WC health care could also promote cost savings.

The DLI initiative was pilot tested in two Washington sites, Seattle and Spokane. In both sites, Centers of Occupational Health Education (COHE) were established to recruit community physicians for the pilot, to hire and train health services coordinators, to develop patient tracking systems, and to provide continuing medical education. The two COHEs recruited over 500 physicians who provided care in clinics, physician offices, and hospital emergency departments. We designed quality indicators that represented occupational health best practices and linked financial payment incentives to these indicators. Every time a physician performed a best practice he or she received added

payment. Using quasi-experimental methods, we designed an evaluation to comprehensively assess the effects of the COHE pilot with regard to four outcomes: (1) off work and on disability one year after injury, (2) number of days of disability, (3) disability costs, and (4) medical costs. Patients treated by COHE physicians comprised the treatment group; the comparison group consisted of all patients treated by non-COHE physicians in the two pilot catchment areas. Using difference-in-difference regression techniques, we assessed changes in outcomes from baseline to one year follow up for the treatment group relative to the comparison group. The total number of patients evaluated was approximately 105,000.

Our evaluation found positive outcomes associated with the COHEs. COHE care was associated with a 21% reduction ( $p < .01$ ) in the risk of being off work and on disability at one year, an average decrease of 4.0 days of disability ( $p < .001$ ), a reduction in disability costs of \$267 per claim ( $p < .001$ ), and a non-significant decrease in medical costs of \$145 per claim. We conducted a sub-analysis of patients with back pain ( $n = 15,300$ ), a common and costly disabling condition. We found greater COHE effects for back pain patients. For this patient cohort, the COHE was associated with an 8-day reduction in disability days ( $p < .001$ ) and decreased disability costs of approximately \$540 ( $p < .001$ ). As part of our evaluation, we also compared outcomes for patients treated by COHE physicians who performed best practices more frequently relative to outcomes of patients treated by COHE physicians who performed best practices less frequently, using the same regression techniques. We found large, and statistically significant, differences in the disability measures and disability costs.

Our evaluation findings led the Washington State legislature to enact a law expanding the COHE pilot on a permanent, statewide basis. Currently COHE physicians provide care to patients in 38 of Washington's 39 counties. It is anticipated by July 2015 there will be over 3,500 COHE physicians providing care to over 60,000 patients. Our evaluation suggests that it is possible to both improve quality and outcomes and decrease costs. Critical to success is creating financial incentives that promote best practices and providing improved care coordination.

**Shi Yin**

Ph.D. Student, University of Macau, China

&

**Ying Bian**

Associate Professor, University of Macau, China

## **Analysis on Price Level and Affordability of Core Medicines in China**

**Background:** As China's new health care reform moves on, price of the medicines that satisfy the primary health care needs of the population has been seizing constant attentions. According to the National Essential Medicines Policy, pricing of these medicines is under government's guidance. However, without adequate supervisory mechanism, this measurement gives chance of rent-seeking and hence induces corruption. After the scandal of corruption happened in the Department of Price of National Development and Reform Commission, the Chinese government intends to deregulate the medicine price in 2015. This brings deep concern of rise in medicine prices.

**Objectives:** (1) to evaluate current price levels of core medicines and (2) to analyze current financial burden of core medicines for population in China.

**Methods:** Surveyed medicines were selected according to the WHO global core list, the Western Pacific Regional Core List (WPRO) and the Essential Medicine List of China. Medicine price data were collected from a CFDA licensed medicine information website. Medicine price level was measured with median price ratio (MPR) recommended by WHO/HAI,  $MPR = \text{median price of a medicine} / \text{its international reference price (IPR)}$ . Financial burden of a medicine was evaluated by calculating the ratio of the expenditure for a medicine within a treatment course to the daily income of residents. The expenditure = unit price of a medicine \* defined daily dose (DDD) \* treatment course. The benchmark for affordability is the ratio <1.

**Results:** The average MPR was 56.38, with a minimum of 1.99 and a maximum of 315.23. The average expenditure for medicines within a treatment course equaled to the income of an urban resident in 0.66 day, or of a rural resident in 1.99 days, or of a resident under poverty line in 7.70 days.

**Conclusions:** The core medicines' price in China is at a really higher level than international reference price. The population in rural areas, especially in poor areas, may suffer from a great financial burden of medicines. Once the medicine price regulation is abolished, social

security system has to be further improved to safeguard their interest in case of rise in medicine price.