

The China Health Policy and Management Society

# China Health Review

Volume 3 Issue 1, April 2012

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China Health Review (CHR), published quarterly, is the official online magazine of the China Health Policy and Management Society (CHPAMS). The CHR is intended to promote health research, policy, practice, and education related to China and the general population health sciences by providing research and policy updates, topical reviews, and other appropriate information. Targeted audience includes (1) academic researchers within and outside of China; (2) policymakers within China; (3) other interested parties including nonprofit organizations and business leaders as appropriate.

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China Health Review (CHR) is soliciting submissions of manuscript for the following sections: *Topical Review*, *Perspectives*, and *History Speaks*.

*Topical Review* is systematic, critical review and assessments of literature and data sources pertaining to a topical issue determined as appropriate by the Editorial team. The articles generally should be kept within 2000 words. Manuscripts in the *Perspectives* section are short reviews that, in most instances, highlight an article(s) that appears in the same or recent issue of the CHR. Perspectives that are not tied to an article are narrower in scope than Topical Review articles and allow more lively and timely discussion of a topical issue. The articles generally should be kept within 1000 words. *History Speaks* is devoted to historical events and prominent figures of significance to population health among the Chinese people within and outside of China. The articles generally should be kept within 1500 words.

In addition, the CHR welcomes short submissions to

two other sections, *Research Twitter* and *Policy and Practice Updates*. *Research Twitter* provides brief summary of most recent research reports appeared in academic journals and grey literature that are relevant to health issues in China and Chinese people. *Policy and Practice Updates* provides brief summary of updates in health policy and practice that appeared in relevant policy briefs, news release, and popular news sources. Submissions to both sections should be kept within 200 words per summary in general. Please contact section Editors listed below for questions, information or submission.

All submissions should be typed, double-spaced, as Word documents only. Manuscripts should conform to the style of the fifth edition of the Publication Manual of the American Psychological Association. All submissions should be submitted electronically to the attention of the Editor. Authors must ensure that their manuscripts are appropriately identified. All submissions, if accepted, shall indicate author's consent to assign CHR rights to disseminate in its final form. However, authors retain the copyright. In particular, publication in the CHR does not preclude authors to submit and publish an edited version of the manuscript in a peer-reviewed journal or as a book chapter.

**Review Process:** Submissions will be reviewed and edited by the CHR's editorial team.

**Contact Information:** Inquiries about the CHR and submissions can be addressed to Dr. Zhuo (Adam) Chen ([CHR@chpams.org](mailto:CHR@chpams.org)). Submissions to the *Research Twitter* and *Policy and Practice Updates* should be addressed to Dr. Feijun Luo ([frankie\\_luo@yahoo.com](mailto:frankie_luo@yahoo.com)) and Dr. Xuezheng Qin ([qin.econpku@gmail.com](mailto:qin.econpku@gmail.com)), respectively.

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# China Health Review

VOLUME 3 ISSUE 1



A magazine of  
the China Health Policy and Management Society

April 2012

## EDITORIAL INTRODUCTION

Spring has arrived in Atlanta and many parts of the world, although accompanied by an uninvited guest, ah-choo, called pollen. Greetings! It is our pleasure to present you with the first issue of China Health Review in 2012.

In the *Interview* section of this issue, Dr. Xin Xu spoke with Dr. Teh-wei Hu, Professor Emeritus of Health Economics and former Associate Dean and Department Chair in the School of Public Health at the University of California, Berkeley. The conversation between Prof. Hu and Dr. Xu touched on various aspects of tobacco control in China.

In the *Perspective* section, Ms. Angela Ni recounted her experience in Yunnan, China investigating the adoption and use of biodigesters among rural households. Ms. Ni argued that biodigesters are not only beneficial in preventing deforestation and pollution, but also have substantial public health benefits in reducing diarrhea.

*Research Twitter* provides summaries of eleven recent publications on China's health issues, including the effects of air pollution on health, association between bodyweight and incidence of suicide, white rice consumption and risk of type II diabetes, socioeconomic status and hypertension, appraisal of China's healthcare reform, urban health, and emergency medical rescue in China.

*Policy Practice and Updates* includes six updates covering topics including the creation of State Council Health Reform Advisory Committee, physician multi-site practicing, and Diagnostic Related Groups based hospital payment system, etc.

In *About CHPAMS*, we introduce Dr. Zhanlian Feng, who is enthusiastic about research on elderly health in both the United States and China. You will also find recent career updates from Drs. Shufang Zhang, Yusheng Zhang, and Xiangming Fang.

Enjoy reading!

# INTERVIEW

## A CONVERSATION WITH PROF. TEH-WEI HU, UNIVERSITY OF CALIFORNIA, BERKELEY

By *Xin Xu, PhD*, University of Illinois at Chicago

徐昕，博士，伊利诺大学，芝加哥

Dr. Teh-wei Hu is a Professor Emeritus of Health Economics and served as Associate Dean and Department Chair in the School of Public Health at the University of California, Berkeley. Currently he serves as the Director for International Tobacco Control Policy Research and Evaluation at the Public Health Institute. He has been appointed by the U.S. Government as a member of the Interagency Committee on Smoking and Health. Professor Hu's areas of expertise are the application of econometrics to health care services research. He is the author of more than 200 publications. He contributed chapters in major WHO and World Bank tobacco control publications. During the past 20 years, he has been conducting research in economics of tobacco control in the US, China, Southeast Asia, and Estonia. He is the editor of *Tobacco Control Policy Analysis in China: Economics and Health* (2008). He co-authored a report on *Tobacco Taxation and Its Potential Impact in China* (Hu, Mao, Shi, and Chen, 2008) funded by the Bloomberg Philanthropies and the Gates Foundation. He has served as a consultant to the World Bank, the World Health Organization, and a senior policy advisor to the Ministry of Health, China.



Dr. Teh-wei HU

**胡德伟教授简介：**胡德伟博士曾任美国加州大学伯克利分校公共卫生学院副院长和系主任，现为该校卫生经济学荣休教授。他同时还担任美国宾夕法尼亚大学经济学教授，美国联邦政府跨部委控烟委员会委员，世界银行及世界卫生组织顾问，中国卫生部高级政策顾问，南开大学富布赖特客座教授，以及中国香港地区和台湾地区政府顾问。在过去的四十年中，胡德伟教授一直从事卫生经济学的教学和研究工作。他的主要研究领域为应用计量经济学，卫生保健服务和烟草控制。迄今为止，胡德伟教授正式发表的论文已达 200 余篇。

### 1. Cigarette Use and Its Consequences in China

#### 中国吸烟现状及其影响

*Xin:* I read your 2011 article in *Tobacco Control* on smoking and related economic costs in China. It provided an update using data from year 2008 and a comparison with data from 2000. I am wondering if you have any comments on cigarette use and its consequences in China.

徐昕：我有幸拜读了您 2011 年发表在烟草研究杂志上有关中国吸烟现状及其经济成本的论文。在这篇文章中，您用 2008 年的数据更新了对中国吸烟状况及其经济成本的分析，并与 2000 年的相关数据做了比较。我知道，您对中国吸烟现状及其影响有什么看法。

*Prof. Hu:* The article was a collaborated work with Prof. MAO Zheng-Zhong at Sichuan University with several important findings. First, smoking prevalence in China has not been declining in recent years. Moreover, the smoking prevalence among youth and women living in urban areas has gone up. The most important finding in the article is the 300% increase in total economic costs of smoking in China between 2000 and 2008, from 6.2 billion to 28.9 billion U.S. dollars. However, I think this is still an underestimate of the situation, as we only considered three major smoking related diseases, i.e., lung cancer, cardiovascular diseases and chronic obstructive pulmonary diseases. Medical costs related to other smoking related diseases were not included. As a result,

these findings imply that if no significant smoking control interventions took place in China in the near future, the economic burden of smoking would escalate even faster than before. There are at least two reasons: (1) the health care cost in China is increasing much faster than the national average consumer price index, and (2) with the rapid economic development in China, the associated indirect costs and the productivity loss could be much higher. That is why we are very concerned about not only the negative health impact, but also the economic impact of smoking on Chinese society.

胡德伟教授：发表在烟草研究杂志上的那篇文章是与四川大学毛正中教授的合作研究。在文中，我们几个重要的发现。首先，近年来中国的吸烟率没有下降。此外，在城市地区的青少年和女性中，吸烟率有所上升。本文最重要的结论是，在 2000 至 2008 年间，在中国与吸烟相关的经济成本增加了 3 倍，从 2000 年的 62 亿美元增长到 2008 年的 289 亿美元。不过，我认为 2008 年的经济成本仍然是被低估的，因为在分析中，我们只考虑了与吸烟有直接关系的三大疾病，肺癌，心血管疾病和慢性阻塞性呼吸系统疾病，而其它与吸烟有关疾病的医疗费用并没有包括在我们估算的经济成本中。所以，这些研究结果意味着，在不久的将来，如果没有明显有效的控烟政策，中国与吸烟相关的经济负担会进一步增长。其增长速度甚至可能比以前更快。导致这种可能性的至少有以下两个原因：（1）在中国保健成本正在上升。其增长速度远远高于全国居民消费品价格指数上涨的平均水平。（2）随着中国经济的快速发展，与吸烟相关的间接成本以及劳动生产率丧失的成本可能会高得多。这就是为什么我们不仅非常关注吸烟对健康的负面影响，也非常关注吸烟对中国社会的负面经济影响。

## 2. Tobacco Control in China: Success and Challenges 中国烟草控制中的成就与挑战

*Xin:* In your opinion, what are the successes and challenges regarding tobacco controls in China?

徐昕：在您看来，中国烟草管控中取得了哪些的成就，又有哪些挑战呢？

*Prof. Hu:* On the positive side, our research findings, as part of the evidence based policy interventions, have been communicated to and beyond the Ministry of Health. Other key policy makers in China, including the State Council, the Ministry of Finance, the State Bureau of Taxation, National Development and Reform Commission, and even the Premier's Office are well aware of two things: (1) the consequences and economic costs of smoking in China and (2) excise tax is an effective way to control cigarette use. So the information has been successfully disseminated to top officials. That being said, we have not seen much of actions so far. The cigarette retail price has remained the same between 2009 and 2011. According to a collaborative survey with the Chinese Center for Diseases Control and Prevention in which retail prices were collected from 6 cities, the cigarette retail price did not change even after the tax adjustment in 2009. The tax adjustment only affected the producer's price and the wholesale price, but not the retail price. This is because of the monopoly power of the manufactures. These companies are part of the government and they make substantial profits from cigarettes. Consequently, even with tobacco excise tax, they could afford to reallocate between the profit and the tax within the Chinese government after the adjustment to maintain their market share.

胡德伟教授：从积极的一面来说，我们的研究成果，作为以实践证据为基础的控烟政策的一部分，已经上报到中国卫生部及其领导部门。其他重要的政策制定部门，包括国务院，财政部，国家税务总局，国家发展和改革委员会，甚至总理办公室都清楚地知道两个事实，（1）在中国吸烟的后果及其经济成本，（2）烟草消费税是一种行之有效的控烟手段。所以，相关信息已成功传递到政府的高级官员。虽然如此，到目前为止，我们还没有看到很多与控烟相关的实际行动。在 2009 至 2011 年间，香烟的零售价格一直保持不变。在一个与中国疾病预防控制中心合作开展的社会调查中，我们从 6 个城市收集香烟零售价格。香烟的零售价格甚至在 2009 年税收调整后都保持不变。税收调整只影响了香烟的出厂价和批发价，而不是零售价。这

是因为卷烟厂拥有市场垄断力。他们是政府的一部分，而且他们从香烟的销售中获取了可观的利润。因此，即使在税收调整后，他们仍然能够在中国政府部门之间调整利润和税收的比例以维持其市场份额。

*Xin:* Chinese government announced the indoor smoke-free regulations on May 1st, 2011. Do we have any anecdotal evidence on the effectiveness of the policy?

徐昕：在 2011 年 5 月 1 日，中国政府宣布“室内公共场所”禁烟令正式生效。有没有任何证据展示这个政策的有效性呢？

*Prof. Hu:* Well, it was good that the government have made further clarifications on the Smoke-Free Public Regulation announced earlier in May, 2011. However, it still lacks concrete implementation strategies, such as how to measure the exposures, who is going to monitor and what is the penalty. Remember, it is not a law. They are regulations in many different cities. From the newspapers and monitoring reports I have seen, there may be some partial success in some cities, such as Haerbin, Guangzhou, and Shanghai. Presumably, these cities developed implementation strategies. However, there is still a lack of systematic evaluation of the impact of this indoor smoking regulation. Also, the Ministry of Health is the only government authority who announced the regulation. Unfortunately, no other organizations or government authorities have made strong advocacy for this regulation.

胡德伟教授：嗯，政府已经对 2011 年 5 月 1 日生效的“室内公共场所”禁烟令做出了进一步的解释。这是个很好的现象。然而，这个条例仍然缺乏具体的实施细则，比如，如何衡量二手烟的危害，谁负责监测，以及违规后的处罚是什么。请记住，禁烟令是不是法律，而是许多城市的条例。根据我所看到的报纸和监测报告，在一些城市，如哈尔滨，广州和上海，有一些部分成功的案例。我推测，这些城市制定了相应的实施细则。不过，目前对“室内公共场所”禁烟令的效果仍然缺乏系统评估。此外，卫生部是唯一公布禁烟令的政府部门。遗憾的是，没有任何其他组织或政府部门加入对禁烟令的宣传。

### 3. Public Policy and Research Priorities in Tobacco Control

#### 烟草控制中公共政策和研究的重点

*Xin:* As a senior policy advisor to the Ministry of Health of China, in your opinion, what are public policy priorities and research priorities on tobacco control in China?

徐昕：作为中国卫生部的高级顾问，在您看来，在中国烟草控制中，哪些是现阶段公共政策和研究的重点？

*Prof. Hu:* From the existing literature and my own professional background, in terms of public policy, I believe the Chinese government should raise tobacco tax, especially the excise tax, the tax based on the quantity of cigarettes purchased. This is an effective policy, allowing the government not only to collect the revenue, but also narrow down the price range of cigarettes.

胡德伟教授：从现有的文献和我本人的专业背景来看，在公共政策方面，我相信中国政府应提高烟草消费税，尤其是从量的消费税。这样税基是购买香烟的数量。无论是从政府税收的角度而言，还是从缩小香烟差价的角度而言，从量的消费税都是非常有效的。

*Prof. Hu:* In terms of research priorities, the following areas might have more importance. First, research has only been done at national level so far, such as economic cost studies, and simulation studies evaluating the impact of excise tax on tobacco industry and tobacco farming. I think the next step is to perform studies for a few major tobacco-producing provinces, e.g. Yunnan, Guizhou, or Hunan provinces. These provinces are very much against tobacco control. Regional analyses need to be done to address the concerns among the top local officials.

Second, the central government is concerned about the impact of raising taxes on the low-income population. This is another area that needs more research. Is this really the case? If so, how large the impact would be? What would be the impact of switching brands among the low-income population with rising taxes? We really need to help the government understand the answers to these questions. And finally, studies on the options, as well as impacts of separating the national tobacco companies from the government ownership. This may not entirely be an economic research, maybe can be referred as political economy, but this is a major hurdle in tobacco control in China. It suggests that Chinese cigarette companies are not operating in a market economy. It is a very important topic, as this type of structure is not only a barrier to the effectiveness of tax increases, but also an obstacle to the implementation of other provisions in the Framework Convention on Tobacco Control, such as health warning labels, or smoke-free public places.

胡德伟教授：从研究角度来说，以下几个领域可能会是重点。首先，当前研究主要局限在国家这一级的层面上，比如对吸烟经济成本的估算，以及我们开展的提高烟草消费税对不同行业及烟草种植业所产生影响的模拟研究。我觉得下一步就是对几个主要的烟草生产省份开展有针对性研究，例如云南，贵州，以及湖南。这些省份是比较反对控烟的。下一步的区域性分析需要切实有效的解决当地政府所关注的问题。其次，中央政府也关注提高烟草消费税对低收入人群产生的影响。这是另一个需要更多研究投入的领域。这种担心真的会发生吗？如果是这样，税收调整会对低收入人群产生多大影响呢？税收调整后，主动降低香烟消费的品牌档次又会对低收入人群产生什么样的影响呢？我们切实需要（通过研究）帮助政府了解这些问题的答案。最后一项研究是考虑，将国家烟草公司从政府所有权中剥离的政策选项及其影响。这可能不是一个纯经济学问题，也许更接近政治经济学研究，但是这是一个中国烟草控制中的主要问题。这意味着中国卷烟企业并没有在市场经济模式中运作。这是一个非常重要的课题，因为这种行业结构不仅是阻碍了烟草消费税的有效性，而且也阻碍了烟草控制框架公约中其他规定的应用，例如香烟的警示标签，或者是无烟公共场所的设立。

#### 4. The Role of Government in Tobacco Control

##### 政府在烟草控制中的作用

*Xin:* The last research priority you mentioned related to the role of government in tobacco control, is that the case?

徐昕：您提到的最后一个研究重点与政府在烟草控制中的作用是息息相关的，是这样吗？

*Prof. Hu:* Right, the separation between national tobacco companies and government definitely relates to the role of government in tobacco control. In fact, we can learn from the international experience, like Turkey, Thailand, South Korean, and even Japan. They all took actions to separate the national ownership from tobacco companies. Also, in national tobacco research conferences or meetings in China, only researchers have been attending and talking to each other. Top government officials have not been involved in these meetings. They did not come even if they were invited. The Chinese government has a top-down system. The system can be very efficient if the government has the will, just like we observed in the severe acute respiratory syndrome epidemic. So I think that top government officials beyond ministers need to be involved in the action. That would be another role of government in tobacco control.

胡德伟教授：是这样的，将国家烟草公司从政府中剥离必然涉及到政府在烟草控制方面的作用。事实上，在这方面我们可以借鉴国际经验，如土耳其，泰国，韩国，甚至日本。他们都采取实际行动将曾经的国有烟草公司私有化。此外，目前只有研究人员出席中国国家级的烟草研究会议并相互交流。政府高层官员没有参与到这些会议中去。即使获得会议邀请，他们也通常缺席。中国政府有一个自上而下的系统。如果政府有相关的意愿，该系统可以非常有效的运作，就如同我们在非典疫情中看到的那样。因此，我认为我们需要比部长更高层级的政府官员参与到行动中来。这是政府在烟草控制方面能够起到的另一个重要作用。

## 5. The Impact of China Health Care System Reform on Tobacco Control 中国卫生体制改革对烟草控制的影响

*Xin:* Another topic in China now is the health care system reform. Do you anticipate any impact of China's health care reform on tobacco control?

徐昕：现在中国面临的另一项课题是卫生保健系统的改革。您认为中国医疗体制改革会对烟草控制产生影响吗？

*Prof. Hu:* I would think so. We know that the medical costs in China and the government share in health care expenditures are much greater than before. Back to the first point we talked about, the medical costs associated with smoking have substantially contributed to this increase in medical care costs. If we could not curb the smoking prevalence, it would incur additional medical costs and government investment in health care in the future, particular on the costly chronic, non-communicable diseases. In that sense, the Health Care reform and tobacco control should work together to reduce health care expenditure and to improve health. On the other hand, under the reform, we also talk about more effective health care delivery system and health care balancing. In the Health Care reform, we need to give incentives to providers, say hospitals and physicians, and consumers, the patients. This way both sides would integrate the tobacco control issue into their agenda. It would make the Health Care reform more effective and cost-effective.

胡德伟教授：实际上，我觉得会的。我们知道，现在中国医疗支出以及政府在医疗保健支出中所占的比重比以前更大。参考我们讨论的第一问题，与吸烟有关的医疗费用在总医疗保健支出的增长中占据了相当的份额。如果我们不能有效控制吸烟率，吸烟将导致额外的医疗支出并造成政府在未来医疗保健投入中的额外开支，特别是在昂贵的非传染性的慢性疾病方面。在这个意义上说，医疗体制改革和烟草控制应共同努力，以减少医疗开支，改善人民健康。另一方面，在医疗体制改革中，我们也在探讨建立更有效的卫生保健服务体系和保健的收支平衡问题。因此，在医疗体制改革中，我们需要向供方（例如，医院和医生）和需方（病人）在烟草控制问题上都提供激励机制。这样双方都会把烟草控制问题整合到他们的日程行动中去。这会使医疗体制改革更有效和更符合成本效益。



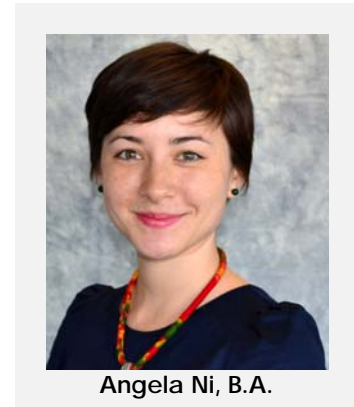
## PERSPECTIVE

### RURAL SANITATION CHALLENGES: GATHERING A MULTI-STAKEHOLDER PERSPECTIVE IN YUNNAN, CHINA

Angela Ni, B.A.\*

#### ABSTRACT

*This paper examines the adoption and use of “biodigesters”, a simple waste-to-energy toilet technology in China. Through interviews with stakeholders directly involved and impacted by water and sanitation development in southwestern China, this paper explores the incentives and barriers to scaling-up biodigesters in rural China. It further examines the extent to which biodigesters are in-line with China’s national and local public health priorities, as well opportunities to establish best practices in the emerging private and not-for-profit sectors. After four decades of use in China, the successes and shortcomings of biodigesters are known, and the experience offers valuable lessons to worldwide rural health development and sanitation campaigns.*



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**摘要:** 本文探讨了“沼气池”，一个简单的将有机废物转化为能源的厕所技术，在中国的采纳和使用过程。通过对中国西南地区受水和卫生条件发展直接影响的利益相关者的访谈，本文归纳了在中国农村推广沼气池的激励和障碍。文章进一步探讨沼气池在中国

国家和地方的公共卫生重点关注领域的地位，以及建立在新兴的私营和非营利为目的的行业标准做法的可能性。通过沼气池在中国境内四十年的使用，其优缺点已广为人知，也为全球范围内的农村卫生发展和卫生运动积累了宝贵的经验。

In August 2011, the Bill and Melinda Gates Foundation launched a “Reinvent the Toilet” competition, awarding US\$3 million to researchers at eight universities and challenging them to design toilet models that operate without sewer connections, water and electricity lines, and cost less than pennies per person per day to use (Eisenberg, 2011). The need for these campaigns is urgent: 2.6 billion people worldwide do not have access to a toilet (Rose, 2008), and diarrhea and water-borne diseases kill more people than HIV/AIDS, tuberculosis, and malaria each year (United Nations, 2006).

In China, with more than 50 percent of the population living in rural areas far away from urban sewage infrastructure, poor sanitation often poses a thorny public health challenge. To address this challenge, preventing fecal pathogens from contacting clean water sources is key. In order to understand how different stakeholders can be better engaged in the effort to upgrade and adopt improved water and sanitation technologies, I spent ten months researching water and sanitation programs in Yunnan, where many villages are plagued by water-scarcity issues and rural poverty (Whines, 2010). I was able to examine the local factors that shape how people perceive and value improved sanitation.

#### BACKGROUND

Biodigesters are one solution to address the need for toilets. Household biodigesters are underground, airtight septic tanks connected to “outhouse” toilets. This design minimizes the risk of contamination to local water tables and reduces the spread of parasitic diseases by collecting human and animal waste in an enclosed tank. Through a process of anaerobic (oxygen-less) fermentation, the digester produces a pathogen-free fertilizer and a flammable gas for lighting and cooking. A major health benefit is improved indoor air quality by reducing villagers’ dependence on wood and coal burning stoves. The digester also produces a residual organic fertilizer that can

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be safely used on crops, allowing China to move away from its intensive use of chemical fertilizers and pesticides, currently exceeding international standards.

## THE SHORTCOMINGS

With financial help from national and local authorities, biodigesters have been installed in households and communities in China since the 1960s, with the total number estimated at nearly 35 million units (Remais et al., 2009). While the technology sounds like a perfect solution to a number of pressing concerns, the household biodigester has its shortcomings. The initial investment for construction can cost roughly 30 percent of a family's annual earnings (average annual income of 6000 RMB). Considerable investment remains despite government subsidies (ranging between 500 and 1500 RMB) to cover construction and material costs. Since 2003, the National Rural Biogas Construction Program has also been providing subsidies nation-wide.

Some farmers I interviewed claimed that they did not receive the full subsidy that the government promised. Farmers recalled showing up at the local energy bureau to claim the biodigester subsidy and being told that their subsidy was deducted for labor wages, transportation costs, and installation fees. China's notorious bureaucratic fragmentation is partially to blame; what is dictated by the central government is not practiced at the local level.

Maintenance is another major concern for biodigester toilet users. Yunnan has been a historical site of poverty alleviation projects, and it is common to see several generations of biodigesters sitting side-by-side in villages, some still working while others abandoned. One reason for inconsistent maintenance and upkeep is that biodigesters are a labor-intensive investment. After receiving training from the local government, farmers are expected to independently dig pits for the unit. This is a large labor trade-off for farming communities that is not covered by government subsidies.

If a problem arises after installation, farmers have to either repair the digester by themselves or call the rural energy bureau to come and fix it. Most farmers do not fully understand how the digester works to make repairs on their own, and the government lacks the personnel and financial resources to fill this knowledge gap. In Yunnan, for example, aside from rural energy bureaus, there is only one company, ZhenHe NengYuan, that provides biogas maintenance services for Yunnan's 2.1 million rural biogas units. Consequently, a lack of community acceptance, ownership, and household participation in projects could limit the diffusion of biodigesters.

## STAKEHOLDER PERSPECTIVE

### *Farmers*

Reducing farmers' out-of-pocket health expenditures is a top government priority in China (KPMG, 2011), so it is not surprising that majority of farmers have built biodigesters with government support, covering material and construction costs. In dozens of household interviews, only one family independently installed their digester without government's financial assistance. The male head of the household said that he invested in his family's biodigester because it produces rather than consumes energy and improved his family's living standards.

My perception of biodigesters being promoted, first and foremost, as a tool to improve public health was challenged, however, by the fact that financial subsidies are coming from provincial forestry and agricultural bureaus, rather than health authorities. It turns out that local forestry bureaus have been supporting biodigesters because they are a deforestation prevention measure: the methane-based biogas produced by the digesters cuts down on the burning of wood and coal for household cooking stoves. The environmental impact of deforestation and carbon dioxide emissions is offset. Financial subsidies are also coming from local agricultural bureaus because they

use biodigesters as a money-saving technology for farmers: the fertilizer produced by the digester limits expenditures on chemical fertilizers and also efficiently increases crop yield.

### *Village Doctors*

Given that biodigesters are being subsidized by government authorities for reasons other than their public health benefits, sanitation is not being directly addressed and still remains a major public health burden in rural areas. When I asked village doctors to name the most burdensome public health concern, water and sanitation issues consistently made it to the top: diarrhea remains the second-most deadly infectious and parasitic disease in China: it is responsible for one of every 100,000 deaths (Ma et al., 2008).

Villages that have yet to benefit from government subsidies, or households located at too high an altitude to maintain a suitable temperature for biogas fermentation, rely on open pit latrines. Come summer, uncovered latrines attract flies. In the rainy winter season, human waste from open-air latrines runs into the street where pedestrians pick up bacteria on their shoes and bring it into their homes. Both sources of waste contamination result in doctors treating a steady source of patients suffering from diarrhea.

Diarrheal treatment burdens China's already strained medical system. When a child is sick with diarrhea, parents rush the child to doctors demanding an injection of antibiotics and an IV drip. Until more recently, doctors have relied heavily on drug prescriptions to make up for operating budget shortfalls. The overreliance on antibiotics for managing diarrheal illness should be alarming given that China currently has the world's highest levels of growing antibiotic resistance (Zhang et al., 2006).

### *Public Health Officials*

If public health officials did more to both quantitatively and qualitatively measure the public health impacts of biodigesters, perhaps their full benefits could be understood. However, the recurring theme in Yunnan's more remote third and fourth tier cities is that county and city health officials are under constant pressure to manage competing public health priorities, such as chronic disease management, basic health services and human resources, and improving access to clean water and sanitation. When asked about sanitation conditions, one health bureau director lamented that his hands are tied by underfunded health mandates continuously being handed down by the government. By some accounts, local governments account for nearly 80 percent of public spending despite receiving less than half of all tax receipts (Man et al., 2010).

Underfunded public health mandates and competing health priorities are overshadowing pressing water and sanitation concerns. It is also worrisome that 70 percent of water samples across Yunnan fail to meet water quality standards. Researchers in the Environmental Health Division at Yunnan's Center for Disease Control and Prevention told me that among the impediments to improving rural water quality and availability, water pollution from human and animal fecal contamination remains a top concern. According to national figures, agricultural pollution accounts for 43 percent of the country's water pollution (Watts, 2011); livestock waste is a major culprit, with only 20 percent of excrement being treated. The Chinese government's 12th Five-Year Plan aims to crack down on water pollution (Tang, 2011). The Plan calls for reductions in carbon dioxide and sulfur dioxide by 8 percent, and in ammonia nitrogen and nitrogen oxides by 10 percent each. Whether the new standards will translate to reductions in water-related and waterborne diseases remains largely up to government enforcement and implementation.

### *Nongovernmental and Private Sector*

New programs promoting biodigesters deserve attention. Two pilots, in particular, are adding a new spin to wastewater management and have the potential to dramatically shift how researchers think about water and sanitation development.

Initiative Développement (ID) is a French NGO in Yunnan piloting projects that apply carbon credits to finance the construction and maintenance of household biodigesters. With financial backing from the French Development Agency (FDA) and the Sino French Cooperation on Climate Change, the project uses the Gold Standard, an international carbon-trading mechanism to transfer carbon revenue to China's Ministry of Finance and provincial Clean Development Mechanism (CDM) centers. ID's aim is to assure the long-term maintenance of biodigesters over their 20-year lifespan. In talking with people involved with this project, I learned that ID also supports training for local maintenance and building crews and educates communities on how to use their digesters properly. The human capital investment will be the key to long-term success.

In the private sector, the Huijia Peike hog farm outside of Kunming, Yunnan's capital, is using a large-scale biodigester to treat up to 150 tons of pig waste per day, removing up to 90 percent of livestock waste pollutants that would otherwise contaminate nearby water sources. While a small portion of the biogas generated is used to power onsite facilities, the remaining gas is piped at no cost to 42 households in a nearby village (Ni, 2011). To support this arrangement, the local county government subsidized households' installation of biogas-operated cooking appliances, such as stoves and rice cookers. Each year, this biogas saves villagers 600 RMB in fuel costs, while limiting deforestation and indoor air pollution from cooking fires.

Huijia Peike Pig Breeding Company has Yunnan's first large-scale biodigester at a factory farm, which is part of a growing trend of large livestock farms adopting similar approaches to waste management (Barclay, 2010). The use of commercial biodigesters on livestock farms has in part been prompted by tightening industry wastewater treatment requirements and stricter discharge standards set by the Ministry of Environmental Protection (Zhang, 2010). In addition, large-scale, integrated systems have the potential to operate with greater returns to waste management by centralizing collection systems, and reducing the risk of isolated leakages from poorly managed cesspools. Similar efforts deserve more attention in order to determine best practices in biodigesters adoption coming from the private sector.

### KEY LEARNING

The story of biodigesters in Yunnan illustrates that water and sanitation development require a coordinated effort across sectors, such as infrastructure and medicine, and also between governments, businesses, NGOs, health practitioners, and rural communities. It remains crucial that the government continues to offer financial incentives to communities and businesses, along with increasing outreach, education, and technical assistance to make the biodigester toilet a viable sanitation option.

China is surpassing the majority of its East Asian neighbors in terms of improved sanitation,<sup>†</sup> but there is still much room for improvement to reach China's sanitation targets. Technology and engineering alone will not provide a one-off solution to water problems facing China or the world. The key issue with biodigesters, as with other water management technologies, is proper implementation. If high standards of operation can be maintained, biodigesters have a strong potential to be scaled-up as a sustainable means of rural development.

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<sup>†</sup> According to the WHO, China's annual incidence rate of diarrheal disease had dropped to 154 cases per 1,000 people in 2008, a rate lower than all East Asian countries except Japan and South Korea.  
<http://apps.who.int/bookorders/anglais/detart1.jsp?sesslan=1.&codlan=1&codcol=52&codcch=133>

## REFERENCES

- Barclay, E. (2010, May 6). China Turns to Biogas to Ease Impact of Factory Farms. *Environment* 360 accessed on January 1, 2011 from [http://e360.yale.edu/feature/china\\_turns\\_to\\_ecological\\_biogas\\_production\\_to\\_ease\\_impact\\_of\\_factory\\_livestock\\_farms/2338/](http://e360.yale.edu/feature/china_turns_to_ecological_biogas_production_to_ease_impact_of_factory_livestock_farms/2338/)
- Eisenberg, A. (2011, Aug 13). Their Mission: To Build a Better Toilet. *New York Times* accessed on December 11, 2011 from [http://www.nytimes.com/2011/08/14/business/toilet-technology-rethought-in-a-gates-foundation-contest.html?\\_r=1&emc=eta1](http://www.nytimes.com/2011/08/14/business/toilet-technology-rethought-in-a-gates-foundation-contest.html?_r=1&emc=eta1)
- KPMG China. (2011). China's 12th Five-Year Plan: Healthcare Sector.
- Man, J.C., & Hong, Y.H. (Eds.). (2010). *Lincoln Institute of Land Policy. China's Local Public Finance in Transition*. November 9, 2010. Accessed on November 30, 2011 from: <http://www.lincolnst.edu/news-events/news-listing/articletype/articleview/articleid/1604/china's-local-public-finance-in-transition>
- Ma, S., & Sood, N. "A Comparison of the Health Systems in China and India." RAND Corporation, p. 14.
- Ni, A. (2011, Feb 10). "A Story of Renewable Energy Use in Rural China, PLOS Medicine Community Blog." *Speaking of Medicine on Public Library of Science (PloS) online*. Posted here: <http://blogs.plos.org/speakingofmedicine/2011/02/10/a-story-of-renewable-energy-use-in-rural-china/>
- Remais, J., Chen, L., Seto, E. (2009). Leveraging Rural Energy Investment for Parasitic Disease Control: Schistosome Ova Inactivation and Energy Co-Benefits of Anaerobic Digesters in Rural China. *PLoS ONE* 4(3): e4856. doi:10.1371/journal.pone.0004856.
- Rose, G. (2008). *The Big Necessity: The Unmentionable World of Human Waste and Why it Matters*. New York: Metropolitan Book.
- Tang, D. (2011, Mar 29) Time to clean up Chinese rural area pollution. *Xinhua.net* accessed on April 11, 2011 from [http://news.xinhuanet.com/english2010/china/2011-03/29/c\\_13802410.htm](http://news.xinhuanet.com/english2010/china/2011-03/29/c_13802410.htm)
- United Nations. (2006) *World water and sanitation crisis urgently needs a Global Action Plan*. Accessed on January 1, 2011, <http://content.undp.org/go/newsroom/2006/november/hdr-water-20061109.en>
- Watts, J. (2011, Feb 9). Chinese farms cause more pollution than factories, says official survey. *The Guardian*. Accessed on December 1, 2011 from <http://www.guardian.co.uk/environment/2010/feb/09/china-farms-pollution>
- Whines, M. (2010, Apr 4). Spring Harvest of Debt for Parched Farms in Southwest China. *New York Times*. Accessed May 21, 2011 from <http://www.nytimes.com/2010/04/05/world/asia/05china.html>.
- Zhang, R., Eggleston, K., Rotimi, V., Zeckhauser, R.J. (2006). Antibiotic resistance as a global threat: evidence from China, Kuwait and the United States." *Global Health* 2 (6): doi:10.1186/1744-8603-2-6
- Zhang, Q., (2010) *Rural biomass Energy 2020 in the People's Republic of China*. Mandaluyung City, Philippines: Asian Development Bank. Accessed on Dec 14, 2011 from <http://beta.adb.org/publications/rural-biomass-energy-2020-peoples-republic-china>

## RESEARCH TWITTER

Wei-Yen Lim, Ying Chen, Khoon Leong Chuah, Philip Eng, Swan Swan Leong, Elaine Lim, Tow Keang Lim, Alan Ng, Wee Teng Poh, Augustine Tee, Ming Teh, Agus Salim and Adeline Seow. **"Female Reproductive Factors, Gene Polymorphisms in the Estrogen Metabolism Pathway, and Risk of Lung Cancer in Chinese Women."** *American Journal of Epidemiology*, 2012, 175(6): 492-503.

The authors examined relations between reproductive factors and 5 estrogen pathway gene polymorphisms (CYP17 rs743572, CYP19A1 rs10046, ER $\beta$  rs1256049, ER $\beta$  rs4986938, and COMT rs4680) among 702 Singapore Chinese female lung cancer cases and 1,578 hospital controls, of whom 433 cases and 1,375 controls were never smokers. Parity (per child, odds ratio (OR) = 0.92, 95% confidence interval (CI): 0.87, 0.97) and menstrual cycle length (for  $\geq 30$  days vs.  $< 30$  days, OR = 0.50, 95% CI: 0.32, 0.80) were inversely associated with lung cancer in never smokers, while age at first birth (for ages 21–25, 26–30, and  $\geq 31$  years vs.  $\leq 20$  years, ORs were 1.54, 2.17, and 1.30, respectively), age at menopause (for ages 49–51 and  $\geq 52$  years vs.  $\leq 48$  years, ORs were 1.37 and 1.59; P<sub>trend</sub> = 0.003), and reproductive period (for 31–33, 34–36, 37–39, and  $\geq 40$  years vs.  $\leq 30$  years, ORs were 1.06, 1.25, 1.45, and 1.47; P<sub>trend</sub> = 0.026) were positively associated. Among smokers, parity was inversely associated with lung cancer, but there was no association with other reproductive factors. The COMT rs4680 A allele was positively associated with lung cancer in never smokers (for G/A or A/A vs. G/G, OR = 1.46, 95% CI: 1.12, 1.90) but not in ever smokers. No associations were seen with other polymorphisms. These results support a risk-enhancing role of estrogens in lung carcinogenesis among never smokers.

Wei Huang, Junji Cao, Yebin Tao, Lingzhen Dai, Shou-En Lu, Bin Hou, Zheng Wang and Tong Zhu. **"Seasonal Variation of Chemical Species Associated With Short-Term Mortality Effects of PM<sub>2.5</sub> in Xi'an, a Central City in China."** *American Journal of Epidemiology*, 2012, 175(6): 556-66.

The authors conducted a time-series analysis to examine seasonal variation of mortality risk in association with particulate matter less than 2.5  $\mu\text{m}$  in aerodynamic diameter (PM<sub>2.5</sub>) and chemical species in Xi'an, China, using daily air pollution and all-cause and cause-specific mortality data (2004–2008). Poisson regression incorporating natural splines was used to estimate mortality risks of PM<sub>2.5</sub> and its chemical components, adjusting for day of the week, time trend, and meteorologic effects. Increases of 2.29% (95% confidence interval: 0.83, 3.76) for all-cause mortality and 3.08% (95% confidence interval: 0.94, 5.26) for cardiovascular mortality were associated with an interquartile range increase of 103.0  $\mu\text{g}/\text{m}^3$  in lagged 1–2 day PM<sub>2.5</sub> exposure. Stronger effects were observed for the elderly ( $\geq 65$  years), males, and cardiovascular diseases groups. Secondary components (sulfate and ammonium), combustion species (elemental carbon, sulfur, chlorine), and transition metals (chromium, lead, nickel, and zinc) appeared most responsible for increased risk, particularly in the cold months. The authors concluded that differential association patterns observed across species and seasons indicated that PM<sub>2.5</sub>-related effects might not be sufficiently explained by PM<sub>2.5</sub> mass alone. Future research is needed to examine spatial and temporal varying factors that might play important roles in modifying the PM<sub>2.5</sub>–mortality association.

Shu-Sen Chang, Chi Pang Wen, Min Kuang Tsai, Debbie A. Lawlor, Yi Chen Yang and David Gunnell. **"Adiposity, Its Related Biologic Risk Factors, and Suicide: A Cohort Study of 542,088 Taiwanese Adults."** *American Journal of Epidemiology*, Advance Access.

The authors investigated the association between body mass index (BMI) and suicide in a cohort of 542,088 Taiwanese people 20 years of age or older who participated in a health check-up program (1994–2008). There were 573 suicides over a mean 8.1 years of follow up. There was a J-shaped association between BMI and suicide risk (P for the quadratic term = 0.033) but limited evidence of a linear association (adjusted hazard ratio per 1-standard-deviation increase = 0.95 (95% CI: 0.85, 1.06)); compared with individuals whose BMI was 18.5–22.9, adjusted hazard ratios for those with a

BMI <18.5 or  $\geq 35$  were 1.56 (95% CI: 1.07, 2.28) and 3.62 (95% CI: 1.59, 8.22), respectively. A high waist-to-hip ratio was associated with an increased risk of suicide. There was some evidence for a reverse J-shaped association of systolic blood pressure and high density lipoprotein cholesterol with suicide and an association of higher triglyceride level with increased suicide risk; these associations did not appear to mediate the associations of BMI and waist-to-hip ratio with suicide.

Bing-Yu Chen, Chang-Chuan Chan, Chung-Te Lee, Tsun-Jen Cheng, Wen-Chuan Huang, Ji-Ci Jhou, Yueh-Ying Han, Chu-Chih Chen and Yue Leon Guo. **"The Association of Ambient Air Pollution With Airway Inflammation in Schoolchildren."** *American Journal of Epidemiology*, Advance Access.

The authors conducted a longitudinal study to investigate whether exposure to ambient air pollutants affected inflammatory cells and mediators from nasal lavage in schoolchildren. Study participants were 100 elementary and middle-school students in New Taipei City, Taiwan. A structured respiratory health questionnaire was administered in September 2007, followed by monthly measurement of nasal inflammation from October 2007 to November 2009. During the study period, daily concentrations of air pollutants were obtained from the Environmental Protection Administration monitoring station and the Aerosol Supersite. Mixed-effects models were applied to examine the association between air pollution and nasal inflammatory cells and mediators, including percentages of neutrophils, eosinophils, and monocytes in lavaged cells and interleukin-8. A total of 824 measurements were obtained from 100 participants over a period of 10 months. The level of particulate matter with an aerodynamic diameter of 2.5  $\mu\text{m}$  or less (PM<sub>2.5</sub>) was found to be associated with percentage of neutrophils ( $\beta = 3.45\%$ , 95% CI: 0.89, 6.01) and interleukin-8 level ( $\beta = 29.98 \text{ pg/mL}$ , 95% CI: 3.26, 56.69) in the nasal lavage on the day of exposure. These results indicated that exposure to PM<sub>2.5</sub> might induce nasal inflammation.

Emily A Hu, An Pan, Vasanti Malik, Qi Sun. **"White rice consumption and risk of type 2 diabetes: meta-analysis and systematic review."** *BMJ*, 2012, 344: e1454.

This paper aims to summarize evidence on the association between white rice consumption and risk of type 2 diabetes and to quantify the potential dose-response relation. It searches Medline and Embase databases for articles published up to January 2012 using keywords that included both rice intake and diabetes. The included studies were prospective cohort studies that reported risk estimates for type 2 diabetes by rice intake levels. Relative risks were pooled using a random effects model; dose-response relations were evaluated using data from all rice intake categories in each study. Four articles were identified that included seven distinct prospective cohort analyses in Asian and Western populations for this study. A total of 13,284 incident cases of type 2 diabetes were ascertained among 352,384 participants with follow-up periods ranging from 4 to 22 years. Asian (Chinese and Japanese) populations had much higher white rice consumption levels than did Western populations (average intake levels were three to four servings/day versus one to two servings/week). The pooled relative risk was 1.55 (95% CI 1.20 to 2.01) comparing the highest with the lowest category of white rice intake in Asian populations, whereas the corresponding relative risk was 1.12 (0.94 to 1.33) in Western populations ( $P$  for interaction=0.038). In the total population, the dose-response meta-analysis indicated that for each serving per day increment of white rice intake, the relative risk of type 2 diabetes was 1.11 (1.08 to 1.14) ( $P$  for linear trend<0.001). This paper concludes that higher consumption of white rice is associated with a significantly increased risk of type 2 diabetes, especially in Asian (Chinese and Japanese) populations.

Xiaoyan Lei, Nina Yin, Yaohui Zhao. **"Socioeconomic status and chronic diseases: The case of hypertension in China."** *China Economic Review*, 2012, 23: 105–21.

China has undergone a rapid epidemiological transition from infectious to chronic diseases, a process characterized by widespread under-diagnosis of chronic diseases and low rates of treatment and control. This paper uses hypertension as an example and documents the association of socioeconomic status with various measures of this condition, i.e., prevalence, awareness,

treatment and control. It finds no wealth and education gradients in the prevalence of hypertension. Given education, wealth plays some roles in improving the treatment and control of hypertension. Some associations exist between education and diagnosis/treatment/control in urban areas but not in rural areas. It also finds that the public health care services in China contribute little in informing patients of their hypertension status, suggesting that how to improve the effectiveness of the health care system in dealing with emerging chronic illnesses should be policy priority.

Qun Meng, Ling Xu, Yaoguang Zhang, Juncheng Qian, Min Cai, Ying Xin, Jun Gao, Ke Xu, J Ties Boerma, Sarah L Barber. **"Trends in access to health services and financial protection in China between 2003 and 2011: a cross-sectional study."** *The Lancet*, 2012, 379(9818): 805 – 14.

The authors assessed trends in health-care access and financial protection nationwide between 2003 and 2011. They used data from the 2003, 2008, and 2011 National Health Services Survey (NHSS). Data were disaggregated by urban or rural residence and by three geographical regions: east, central, and west, and by household income. They found that between 2003 and 2011 insurance coverage increased from 29.7% (57 526 of 193 689) to 95.7% (57 262 of 59 835,  $p < 0.0001$ ). The average share of inpatient costs reimbursed from insurance increased from 14.4 (13.7—15.1) in 2003 to 46.9 (44.7—49.1) in 2011 ( $p < 0.0001$ ). Hospital delivery rates averaged 95.8% (1219 of 1272) in 2011. Hospital admissions increased 2.5 times to 8.8% (5288 of 59 835,  $p < 0.0001$ ) in 2011 from 3.6% (6981 of 193 689) in 2003. 12.9% of households (2425 of 18 800) had catastrophic health expenses in 2011. Caesarean section rates increased from 19.2% (736 of 3835) to 36.3% (443 of 1221,  $p < 0.0001$ ) between 2003 and 2011. The authors pointed out that remarkable increases in insurance coverage and inpatient reimbursement were accompanied by increased use and coverage of health care. Important advances have been made in achieving equal access to services and insurance coverage across and within regions. However, these increases have not been accompanied by reductions in catastrophic health expenses. With the achievement of basic health-services coverage, future challenges include stronger risk protection, and greater efficiency and quality of care.

Luxia Zhang, Fang Wang, Li Wang, Wenke Wang, Bicheng Liu, Jian Liu, Menghua Chen, Qiang He, Yunhua Liao, Xueqing Yu, Nan Chen, Jian-e Zhang, Zhao Hu, Fuyou Liu, Daqing Hong, Lijie Ma, Hong Liu, Xiaoling Zhou, Jianghua Chen, Ling Pan, Wei Chen, Weiming Wang, Xiaomei Li, Haiyan Wang. **"Prevalence of chronic kidney disease in China: a cross-sectional survey."** *The Lancet*, 2012, 379(9818): 815 – 22.

The authors did a cross-sectional survey of a nationally representative sample of Chinese adults to measure the prevalence of chronic kidney disease in China. Chronic kidney disease was defined as eGFR less than 60 mL/min per 1.73 m<sup>2</sup> or the presence of albuminuria. The crude and adjusted prevalence of indicators of kidney damage were calculated and factors associated with the presence of chronic kidney disease analyzed by logistic regression. 50,550 people were invited to participate, of whom 47 204 agreed. The adjusted prevalence of eGFR less than 60 mL/min per 1.73 m<sup>2</sup> was 1.7% (95% CI 1.5—1.9) and of albuminuria was 9.4% (8.9—10.0). The overall prevalence of chronic kidney disease was 10.8% (10.2—11.3); therefore the number of patients with chronic kidney disease in China is estimated to be about 119.5 million (112.9—125.0 million). In rural areas, economic development was independently associated with the presence of albuminuria. The prevalence of chronic kidney disease was high in north (16.9% [15.1—18.7]) and southwest (18.3% [16.4—20.4]) regions. Other factors independently associated with kidney damage were age, sex, hypertension, diabetes, history of cardiovascular disease, hyperuricaemia, area of residence, and economic status.



Winnie Chi-Man Yip, William C Hsiao, Wen Chen, Shanlian Hu, Jin Ma, Alan Maynard. **"Early appraisal of China's huge and complex health-care reforms."** *The Lancet*, 2012, 379(9818): 833 – 42.

China's 3 year, CN¥850 billion (US\$125 billion) reform plan, launched in 2009, marked the first phase towards achieving comprehensive universal health coverage by 2020. The government's undertaking of systemic reform and its affirmation of its role in financing health care together with priorities for prevention, primary care, and redistribution of finance and human resources to poor regions are positive developments. Accomplishing nearly universal insurance coverage in such a short time is commendable. However, transformation of money and insurance coverage into cost-effective services is difficult when delivery of health care is hindered by waste, inefficiencies, poor quality of services, and scarcity and maldistribution of the qualified workforce. China must reform its incentive structures for providers, improve governance of public hospitals, and institute a stronger regulatory system. The pace of reform should be moderated to allow service providers to develop absorptive capacity. Independent, outcome-based monitoring and evaluation by a third-party are essential for mid-course correction of the plans and to make officials and providers accountable.

Peng Gong, Song Liang, Elizabeth J Carlton, Qingwu Jiang, Jianyong Wu, Lei Wang, Justin V Remais. **"Urbanisation and health in China."** *The Lancet*, 2012, 379(9818): 843 – 52.

China's rapid urbanisation has important consequences for public health. A provincial analysis of its urbanisation trends shows shifting and accelerating rural-to-urban migration across the country and accompanying rapid increases in city size and population. The growing disease burden in urban areas attributable to nutrition and lifestyle choices is a major public health challenge, as are troubling disparities in health-care access, vaccination coverage, and accidents and injuries in China's rural-to-urban migrant population. Urban environmental quality, including air and water pollution, contributes to disease both in urban and in rural areas, and traffic-related accidents pose a major public health threat as the country becomes increasingly motorised. To address the health challenges and maximize the benefits, innovative health policies focused on the needs of migrants and research that could close knowledge gaps on urban population exposures are needed.

Lulu Zhang, Xu Liu, Youping Li, Yuan Liu, Zhipeng Liu, Juncong Lin, Ji Shen, Xuefeng Tang, Yi Zhang, Wannian Liang. **"Emergency medical rescue efforts after a major earthquake: lessons from the 2008 Wenchuan earthquake."** *The Lancet*, 2012, 379(9818): 853 – 61.

The 2008 Wenchuan earthquake was one of the most devastating disasters in the past 10 years and caused more than 370,000 casualties. The lessons learnt from the medical disaster relief effort and the subsequent knowledge gained about the regulation and capabilities of medical and military back-up teams should be widely disseminated. In this Review the authors summarized and analyzed the emergency medical rescue efforts after the Wenchuan earthquake. Establishment of a national disaster medical response system, an active and effective commanding system, successful coordination between rescue forces and government agencies, effective treatment, a moderate, timely and correct public health response, and long-term psychological support are all crucial to reduce mortality and morbidity and promote overall effectiveness of rescue efforts after a major earthquake.

## **POLICY AND PRACTICE UPDATES**

### **Bayer Pharmaceutical Will Relocate Its OTC Global Headquarters to China**

Source: Sohu Health 2011-7-05

<http://health.sohu.com/20110328/n304996674.shtml>

Li Xilie, Bayer's China branch president, revealed that Bayer will officially move its generic drug global headquarters to Beijing, China. According to Mr. Li, very few international corporations are based in China. By making this historical move, Bayer aims to have a better understanding of Chinese consumers' needs and adjust accordingly its research and development and resource allocation. Bayer believes that their move can improve technology and standards of China's pharmaceutical industry, enticing more firms to follow Bayer's example.

Bayer spends more than 15% of its total sales in research and development, and it plans to introduce 20 new products to the market in the next 5 years. Bayer implemented "regionalization" strategy, establishing 3 full-function regional headquarters in China: northern region with Beijing as headquarter; eastern region with Shanghai as headquarter; and western region with Chengdu as headquarter. Currently, northern region occupies 45% of the Chinese market, while the western region is showing the fastest growth.

### **State Council Launched Health Reform Advisory Committee to Restructure Drug Circulation System**

Source: 21st Century Economic Report 2011-7-05

[http://www.cs.com.cn/xwzx/14/201107/t20110705\\_2952429.html](http://www.cs.com.cn/xwzx/14/201107/t20110705_2952429.html)

The State Council Health Care Reform Advisory Committee was established on June 23<sup>rd</sup>, 2011 to assist China's medical reform. The main functions of the committee are offering consultation for health care reform plans, conducting surveys and researching local health care reform results, evaluating effectiveness of health care reforms, providing policy change suggestions, and establishing links with news media. Many famous scholars in various fields from China and abroad are included in the committee.

The health care reform plan was revealed in 2009, with a three-year time frame to accomplish the main objectives. As the countdown begins, the question remains if the reform plan has been implemented or still remains on paper. The main task of the committee is to assist the State Council in designing the health care reform as part of the Twelfth Five Year Plan. During its first meeting, committee members had heated debate over whether health care should be viewed as a public good. This debate draws attention to the experts' disagreement about the right approach to reform - whether the government should subsidize the supply side or the demand side.

In addition to the role of public hospitals, the reconstruction of drug circulation system is also an important issue. The trade-offs between drug quality and cost need to be balanced for the reform to be successful.

### **Suqian's New Drug Compensation Policy: 30% Government Subsidy on Top of Health Insurance**

Source: 21st Century Economic Report 2011-7-11

<http://www.21cbh.com/HTML/2011-7-9/5NMDY5XzM00TY5Ng.html>

The National Essential Drug Policy will be implemented in all the primary health care institutes by the end of 2011, which will make essential drugs "zero profit". A persisting issue in achieve this goal has been whether to subsidize the supply side (hospitals) or the demand side (patients). After much research and discussion, the Suqian Government decided to compensate the demand side,

providing an extra 30% subsidy in addition to patients' health insurance to ensure their essential drug expenditure is no higher than that in surrounding regions. The reform also allows private hospitals to negotiate medicine prices on their own, instead of participating in the provincial bidding and procurement process.

The innovative plan still needs clarification on implementation details, but it achieves "zero profit" without hurting the profitability of private hospitals and at the same time brings welfare to patients. One concern is that the National Essential Drug Policy requires drug bidding and procurement process be carried out at the provincial level, in direct contrast to Suqian's reform plan. It remains to be seen if Suqian can stay outside the national plan.

### **Multi-site Practicing will be allowed for More Doctors Nationwide**

Source: 21st Century Economic Report 2011-7-26

<http://finance.ifeng.com/news/industry/20110726/4309700.shtml>

On July 25th, the Ministry of Health made an announcement allowing more multi-site practicing for doctors nationwide, expanding the implementation area to cities and provincial centers involved in the Public Hospital Reform and two extra prefectures in each city or province. The Ministry of Health lowered the entry requirements for doctors to start practicing, but also tightened management and evaluation of multi-site practicing doctors.

However, multi-site practicing was not well-received in the first generation of experimenting cities such as Beijing, Guangdong and Hainan. Few qualified doctors were willing to perform their jobs in several different institutions. The first obstacle lies in concerns from those doctors. They fear that they will be exposed to more pressure and risk, without a corresponding increase in protection. The second difficulty stems from the current personnel system. Doctors represent hospitals' primary asset and their competitiveness, so hospitals have no incentive to encourage their doctors to practice at other sites. Experts point out that for multi-site practice to become more popular, hospital personnel system needs reform, and doctors' responsibilities and rights should be clarified and protected.

### **Beijing's First Experience with DRG Based Hospital Payment**

Source: Economic Observer 2011-8-15

<http://news.hexun.com/2011-08-10/132281370.html>

Beginning on August 1st, six hospitals in Beijing will experiment with an innovative payment system, charging patients with insurance according to Diagnostic Related Groups (DRG) – a disease classification code based on age, disease severity, treatment method etc. The DRG coding is made possible because hospitals in Beijing adopted the electronic health information system. A primary reason for initiating this payment system is to avoid hospitals providing "excessive" treatments, prescription, and over-charging medical insurance fund.

Although the new arrangement is theoretically feasible, a few concerns still need to be addressed. The first concern is how to determine the disease categories and how to price them. So far, the categorization standard is set by the Ministry of Human Resources and Social Security, and hospitals do not know classification details and methodologies. It is suggested that a broader group of experts should participate in the classification process, such as hospitals and academia. The second concern is that DRG payment system only deals with pricing, but not medical care quality. It is predicted that the administrative capacity of the government is the most significant factor to determine whether the reform will succeed.

### **Jining's Health Reform: Paying after Treatment**

Source: Economic Observer 2011-8-6

<http://finance.sina.com.cn/g/20110806/102710273086.shtml>

Many Chinese patients, especially those in poor rural areas, suffer from heavy financial burden when sick, and some of them gave up treatment because of limited financial resources. Recently, a new kind of payment arrangement emerged in Jining, allowing insured patients to receive treatment first, and pay the deductibles later in one or more installments. This endeavor has been tried and failed in other hospitals. However, according to the head of Yanzhou TCM hospital, if payment from Rural Cooperative Medical Services and Medical Insurance Service is guaranteed, the hospital would have balanced expenditure and compensation even if majority of patients default. He believes that most of the patients, after receiving the medical treatment, are willing to pay for the service and medicines as long as financial situation permits. This arrangement has so far worked very well both for the patients and the hospital.

However, more obstacles might be encountered if this payment system was to be expanded. Some experts say this arrangement is probably only applicable for primary hospitals, where the payment of each patient is relatively small in secondary or tertiary hospitals.

## ABOUT CHPAMS: FEATURE MEMBER

### Zhanlian Feng, PhD



*Zhanlian Feng, PhD*

Zhanlian Feng, PhD, is an Assistant Professor of Health Services, Policy and Practice (Research), currently with the Center for Gerontology and Healthcare Research at Brown University. Dr. Feng has more than 10 years of research experience in long-term care and health services research concerning the older population in the United States. More recently, his research has focused on emerging long-term care issues in China. He has been at the forefront in tracking and studying the phenomenal development of a new sector of long-term care facilities across Chinese cities. Recent publications have appeared in *Health Affairs* (2011), *Archives of Internal Medicine* (2011), *Journal of the American Geriatrics Society* (2011), and *Health Services Research* (2010). A social demographer by training, Dr. Feng received his master's and doctoral degrees in sociology from Brown University and a bachelor's degree in sociology from Peking University.

1. *What has been the greatest achievement of your career?*

It has brought to me the greatest sense of achievement to realize that some of my published work has reached a broader audience than a tiny circle of fellow academics, thereby making a difference in the real world—however small it may be.

2. *What is your idea of a perfect day?*

Starting afresh with a favorite cup of coffee, finishing all that needs to be done by the end of the day, and going home with work completely out of mind.

3. *What is your worst habit?*

At times, I procrastinate—especially with things that are least favorite but still need to be done in the end.

4. *If you had not entered your current profession, what would you have liked to do?*

To run a bookstore or coffee shop—perhaps.

5. *How do you relax?*

Playing with and learning from my kids.

## ABOUT CHPAMS: MEMBERS' UPDATES

### AWARDS

*Dr. Lihua Xiao*, a senior scientist at CDC, was awarded the 2012 Henry Baldwin Ward Medal from the American Society of Parasitologists in recognition of his leadership in parasitological research and outstanding contribution to the field of Parasitology.

### CAREER AND PROFESSIONAL APPOINTMENT

After receiving her *Sc.D.* in Health Economics from the Harvard School of Public Health, *Dr. Shufang Zhang* joined the United Nations Research Institute for Social Development (UNRISD) in June 2011 as coordinator of Project on Migration and Health in China at UNRISD. She also serves as a technical advisor for the China Medical Board for its capacity building programs in Health Policy and System Sciences in China.

In September 2011, *Yusheng Zhang, MD, MPH, MBA*, returned to Beijing and co-founded the Apricot Forest ([www.xingshulin.com](http://www.xingshulin.com)) where he serves as the CEO. Apricot Forest specializes in developing smart phone applications for physicians in China. Before Dr. Zhang returned to China, he was a Clinical Strategy Manager at Wellpoint Inc. in the United States,

*Xiangming Fang, PhD*, accepted a position as Professor of Economics and Director of the International Center for Applied Economics and Policy Research at the China Agricultural University, starting in February 2012. The China Agricultural University is a Key National University in China that has formed a comprehensive university covering a wide range of fields such as agriculture and life science, resources and environment, information and computer science, agricultural engineering and automation science, economics, management and social sciences, etc. Dr. Fang was a senior health economist at the National Center for Injury Prevention and Control, the U.S. Centers for Disease Control and Prevention.