ETHICAL IMPLICATIONS OF CASE-BASED PAYMENT IN CHINA: A SYSTEMATIC ANALYSIS

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ABSTRACT

How health care providers are paid affects how medicine is practiced. It is thus important to assess provider payment models not only from the economic perspective but also from the ethical perspective. China recently started to reform the provider payment model in the health care system from fee-for-service to case-based payment. This paper aims to examine this transition from an ethical perspective.

We collected empirical studies on the impact of case-based payment in the Chinese health care system and applied a systematic ethical matrix that integrates clinical ethics and public health ethics to analyze the empirical findings. We identified eleven prominent ethical issues related to case-based payment. Some ethical problems of case-based payment in China are comparable to ethical problems of managed care and diagnosis related groups in high-income countries. However, in this paper we discuss in greater detail four specific ethical issues in the Chinese context: professionalism, the patient-physician relationship, access to care and patient autonomy. Based on the analysis, we cautiously infer that case-based payment is currently more ethically acceptable than fee-for-service in the context of China, mainly because it seems to lower financial barriers to access care. Nonetheless, it will be difficult to justify the implementation of case-based payment if no additional measures are taken to monitor and minimize its existing negative ethical implications.

INTRODUCTION

How health care providers should be paid seems to be a challenge for economists rather than for bioethicists. However, provider payment models as an important component of health care financing are never ethically neutral. Payment models have been carefully designed to guide the decision and behavior of health care providers in many countries.[1] Hence, they influence how doctors practice medicine, and thus determine the quality and availability of health care.[2]

China recently started to reform the provider payment system in health care in response to the public concern that it is 'too difficult to see a doctor and too expensive to seek health care'.[3] Since many researchers associated the currently dominant fee-for-service payment model with the over-provision and unaffordability of medical services in the Chinese health care system, a provider payment reform to move away from fee-for-service seemed to be both urgent and necessary.[4] One prominent replacement of fee-for-service is case-based payment.

[1] G. Flodgren et al. An Overview of Reviews Evaluating the Effectiveness of Financial Incentives in Changing Healthcare Professional Behaviours and Patient Outcomes. *Cochrane Database Syst Rev* 2011; 7: CD009255.
[2] W. Hsiao & Y. Liu. 2001. Health Care Financing: Assessing Its Relationship to Health Equity. In *Challenging Inequities in Health: From Ethics to Action*. T. Evans et al., ed. Oxford University Press: 260–275.
[3] S. Hu et al. Reform of How Health Care is Paid for in China: Challenges and Opportunities. *The Lancet* 2008; 372: 1846–1853.
[4] Ibid; W. Yip et al. Realignment of Incentives for Health-care Providers in China. *The Lancet* 2010; 375: 1120–1130; A. Wagstaff et al. China's Health System and Its Reform: a Review of Recent Studies. *Health Econ* 2009; 18: S7–S23.

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Unlike fee-for-service where providers gain profit by increasing the quantity of medical services, case-based payment reimburses hospitals based on the diagnosis of diseases (cases) according to a pre-defined rate scheme.[5] The pre-defined rate of a case hence sets a limit to the overall expenses for individual patients, which presumably mitigates the prevalence of over-treatment in the fee-for-service system. Case-based payment in China is used for in-patient services and currently covers a few common diseases that have a clear diagnosis and a widely-accepted treatment protocol such as acute appendicitis or hysteromyoma.[6] In 2007, three years after the initiative issued by the Ministry of Health to advocate the introduction of case-based payment, more than one fifth of the Chinese hospitals implemented it.[7]

Although provider payment models are of significant ethical relevance, this transition from fee-for-service to case-based payment in the Chinese health care system has not been rigorously assessed from the ethical perspective. This paper aims to provoke a richer ethical discussion of payment models with the purpose of cost containment such as case-based payment. We believe that only economic reasons alone are not sufficient to justify any given payment model. Financial incentives embedded in payment models can be so powerful within certain contexts that they will not only influence the quality of care and access to care, but also physicians' professionalism.[8] These are critical ethical concerns that should be taken into account in the implementation and evaluation of case-based payment in China.

Payment models in health care occupy a particular niche for ethical assessment because their effects stretch across the domains of public health and clinical medicine. In the field of public health, payment models work as the policy instrument that can influence the health of the population. In the field of clinical medicine, they involve incentives that influence the behavior of health care providers. In this sense, relying solely on either the perspective of public health ethics or of clinical ethics will be insufficient to address the ethical issues pertinent to payment models. Therefore, we adopt a systematic matrix (a detailed description is reported elsewhere[9]) that combines public health ethics and clinical ethics for our research question: what are the ethical issues around case-based payment in China? And are any of these ethical issues distinctive due to the context?

In the following sections, we first present a short description of the health care system and medical ethics in China to better contextualize case-based payment. We then briefly introduce the systematic matrix that has been designed by our research group to examine the ethical implications of the payment model Diagnosis Related Groups (DRGs), and we present here a version adapted to the Chinese context. Next, we apply the adapted matrix to distinguish the ethical implications of case-based payment by examining empirical findings. In the end, we identify and analyze four specific ethical issues in the context of China to enrich the current ethical discussion of payment models.

MARKET-ORIENTED HEALTH REFORM AND MEDICAL ETHICS IN CHINA

After more than two decades of reform, health care in China has transformed from a centrally-planned system to a market-oriented system.[10] However, this new market-oriented system has been officially acknowledged to have limitations in some aspects.[11] One significant limitation is the high out-of-pocket spending from individual patients, which aggravates the financial barriers and inequalities in access to care.[12] To tackle this challenge, the Chinese government not only initiated the provider payment reform but also started to expand the national medical insurance coverage. In 2010, more than 90% of the population in China was covered by one kind of basic medical insurance.[13]

In the meantime, the market-oriented reform has also contributed to reshaping some aspects of the medical morality in China including the trust and physicians' professionalism.[14] This reshaping stands in a long history of Chinese medical ethics that has always been a diverse and constantly evolving entity in both ancient and

[5] Yip et al., *op. cit.* note 4.

[6] World Bank. 2010. *Main report*. Vol. 2 of *Health Provider Payment Reforms in China: What International Experience Tells Us*. China Health Policy Notes; no. 5. Washington D.C.: The World Bank. Available at: http://documents.worldbank.org/curated/en/2010/07/13246497/health-provider-payment-reforms-china-international-experience-tells-vol-2-2-main-report [Accessed 19 March 2014].

[7] Yip et al., *op. cit.* note 4.

[8] H. Barnum, J. Kutzin & H. Saxenian. Incentives and Provider Payment Methods. *Int J Health Plann Manage* 1995; 10: 23–45; R. Collier. Professionalism: How Payment Models Affect Physician Behaviour. *CMAJ* 2012; 184: E645–E646.

[9] C. Fourie, N. Biller-Andorno & V. Wild. Systematically evaluating the impact of Diagnosis-Related Groups (DRGs) on health care delivery: A matrix of ethical implications. *Health Policy* 2014; 115(2–3): 157–164.

[10] J. Ma, M. Lu & H. Quan. From a National Centrally Planned Health System to a System based on the Market: Lessons from China. *Health Aff (Millwood)* 2008; 27: 937–948.

[11] R. Qiu. 2008. On the Reform of Health care Reform. In *China: Bioethics, Trust, and the Challenge of the Market*. J. Tao, ed. Springer: 181–192; Wagstaff et al. *op. cit.* note 4.

[12] Ma et al., *op. cit.* note 10; W. Hsiao. The Chinese Health Care System: Lessons for Other Nations. *Soc Sci Med* 1995; 41: 1047–1055.

[13] C. Wang, K. Rao, S. Wu & Q. Liu. Health Care in China: Improvement, Challenges, and Reform. *Chest* 2013; 143: 524–531.

[14] J. Tao. 2008. Confucian Trust, Market and Health Care Reform. In *China: Bioethics, Trust, and the Challenge of the Market*. J. Tao, ed. Springer: 75–87; E. Hui. The Contemporary Healthcare Crisis in China and the Role of Medical Professionalism. *J Med Philos* 2010; 35: 477–492.

contemporary times.[15] The traditional Chinese medical morality is mainly featured with Confucianism (perceived by many as dominant), Taoism and Buddhism; while the contemporary medical morality not only inherits these traditions but also takes in the influence from the 'Western' medical ethics.[16] In our following presentation of empirical findings within our systematic ethical matrix we have taken this specific context of Chinese medical ethics into consideration.

THE SYSTEMATIC ETHICAL MATRIX

In this paper we use an ethical matrix (in the following referred to as the matrix) that can help us to identify and assess the ethical implications of case based payment in China. The matrix has been initially developed by our research group in relation to the research on Diagnosis Related Groups in Switzerland.[17] We adopt this matrix (in an adapted version) for several reasons. First of all, the matrix has the advantage of integrating prominent theories and frameworks in public health ethics and clinical ethics; secondly, the matrix is relevant and useful because it is constructed based on a reflective equilibrium of both empirical evidence on DRGs and relevant ethical theories; lastly, it has been designed by our research group to focus on the ethical implications of DRGs, a payment model that shares crucial common features with the case-based payment implemented in China from the ethical perspective, as we have explained in more detail elsewhere.[18]

The matrix primarily consists of three categories: *underlying ethical values, primary and secondary ethically relevant parameters*, and *examples of research questions.*[19] Considering our research question and the context of China, we made some adaptations to the matrix. Because we believed that the patient's individuality and variety are important aspects for our study, we expanded the category of '*autonomy*' to the broader concept of '*respect*'.[20] Further, since virtue ethics is an important concept in Chinese health care, we specified *professionalism* according to Pellegrino's virtue ethics for health care professionals[24] and the recent published 'Chinese Medical Doctor Declaration' that advocates professionalism among Chinese physicians.[25] The adapted matrix is shown in Table 1.

*Table 1. Adapted version of systematic ethical matrix for analyzing ethical issues of case-based payment in China**

Values	*Parameters*
	Effects on primary ethically relevant parameters:
i. Utility	**Cost and Efficiency**
ii. Producing benefits	**Quality of care**
iii. Distributive justice	**Access to health care**
iv. Transparency	**Transparency**
v. Respect	**Respect for patient's autonomy**
	Respect for patient's individuality and variety[21]
	Effects on secondary ethically relevant parameters:
vi. Professionalism (and links to above values)	**Clinical autonomy**
	Fidelity and honesty
	Incorruptibility and impartiality
	Commitment to excellence, prudence and lifelong learning
	Sustain harmonious patient-physician relationship[22]
vii. Other (Potential links to above values)	**Work environment and job satisfaction**
	Ethics of DRG-related decision-making procedures:
viii. Procedural justice	**Fairness of health care reform procedures**

*Adapted from Matrix for identifying the ethical implications of the implementation of DRGs[23]

Considering the inclusiveness and flexibility of the matrix, we advocate applying and adapting it to analyze the ethical issues of payment models in health care that are not limited to case-based payment or DRGs. For instance, global budgets or payment per diem may also be examined by applying the matrix. Specifically, the matrix can be used in at least two ways: the identification of ethical issues and the analysis of these issues. We apply the matrix mainly to identify the salient ethical issues of case-based payment in China. It is noteworthy that the identification and analysis of the ethical implications of payment models cannot be isolated from the context. Therefore, we take into account the particular circumstances of China not only in further developing the matrix, but also in applying it in the following discussion.

[15] J. Nie. The Plurality of Chinese and American Medical Moralities: Toward an Interpretive Cross-Cultural Bioethics. *Kennedy Inst Ethics J* 2000; 10: 239–260; P. Unschuld. 1979. Medical Ethics in Imperial China. Berkeley: University of California Press.

[16] J. Nie. 2011. *Medical Ethics in China: A Transcultural Interpretation*. London: Routledge: 89–97.

[17] Fourie, Biller-Andorno & Wild, *op. cit.* note 9.

[18] P. Jin, N. Biller-Andorno & V. Wild. Case-based Payment System in the Chinese Health Care Sector and Its Ethical Tensions. *Asian Bioeth Rev* 2013; 5: 131–146.

[19] Fourie, Biller-Andorno & Wild, *op. cit.* note 9.

[20] The AMA Code of Medical Ethics' Opinions on Cost Containment, Payment Structures, and Financial Incentives. *Virtual Mentor* 2012; 14: 854–860.

[21] The AMA Code of Medical Ethics' Opinions on Cost Containment, Payment Structures, and Financial Incentives. *op. cit.* note 20.

[22] Shi, *op. cit.* note 25.

[23] Fourie, Biller-Andorno & Wild, *op. cit.* note 9.

[24] E.D. Pellegrino. Toward a Virtue-based Normative Ethics for the Health Professions. *Kennedy Inst Ethics J* 1995; 5: 253–277.

[25] L. Shi. Background, Content and Social function of Chinese Medical Doctor Declaration. *Chin Hosp* 2011; 15: 50–51 (Chinese).

RESULTS

In order to apply the matrix to identify ethical issues around case-based payment in China, we need to gather the existing empirical studies on the impact of this payment model. We therefore conducted a search of literature in PubMed and CNKI (the largest Chinese academic database) which respectively returned seven and 486 results (English and Chinese search algorithms see Supplement 1). After examining the abstract and full text, we gathered 51 journal articles and five theses. The majority of the studies focus on the issues of cost containment and quality of care. In order to gain a broader insight, we also conducted two surveys to investigate physicians' perceptions of case-based payment; the results are reported elsewhere.[26]

We applied the matrix to categorize the gathered empirical studies, and found that case-based payment has ethical implications on eleven parameters (Table 2).[27]

In general, an analysis of the current empirical studies suggests that case-based payment has a positive impact on ethical parameters including *cost and efficiency* as well as *transparency*; meanwhile it may have a negative impact on parameters such as *respect for patient autonomy, respect for patients' individuality and variety, physicians' clinical autonomy* and *work environment and job satisfaction*. However, on key parameters such as *quality of care* and *access to care*, case-based payment has ambiguous impact.

DISCUSSION

Many of the ethical implications of case-based payment identified here are not unfamiliar. They resemble the discussions of ethical issues pertinent to managed care, DRGs and other cost containment measures in high-income countries. Many of these cost containment measures including case-based payment rest on a common ground that they intend to guide the behavior of providers through financial incentives. Therefore, they have seemingly raised similar ethical concerns. Issues including impaired quality of care,[28] reduced access to care,[29] restricted clinical autonomy,[30] compromised traditional professional ethics[31] and negative effects on patient-physician relationship[32] have been addressed previously in the literature and have also been identified here (see Table 2).

Furthermore, we find that case-based payment has ambivalent effects on some parameters such as quality of care and access to care. This is not surprising as it can well be the case that case-based payment results in ambiguous effects depending on the specific context. Therefore it seems necessary to examine the different aspects of these issues to dissect the complex and conflicting influences of case-based payment. Close and continuous monitoring in different settings in China is needed to see where negative effects occur and what counter measures can be taken. Another possible explanation for the ambiguity of the results is that some studies may not be as methodologically robust as others, and more rigorous empirical research may be required to determine the actual ethical implications of case-based payment.

In the following discussion, we will highlight four specific ethical issues: professionalism, patient-physician relationship, access to care and patient autonomy. They are specific and worthy of attention because case-based payment has both positive and negative implications on these ethical parameters in the Chinese context.

Professionalism: Restored or Compromised?

The fee-for-service system has been criticized for setting the wrong incentives by nudging physicians to provide excessive care to patients, thereby counteracting their professionalism.[33] The incentivizing effect on physicians can turn out to be even stronger in some contexts in China.[34] Since the economic reform in the 1980s, the governmental subsidies for Chinese public hospitals were cut from over half of their revenue to around one tenth. To stay operational, hospitals started to try to gain profit by treating patients.[35] However, the price scheme of medical services in the fee-for-service system was in many regards controlled by the government instead of by the market.

[26] P. Jin. Ethical implications of case-based payment in China [dissertation]. Zurich: University of Zurich; 2013.

[27] We included only exemplary references in this table. A full list of references can be requested from the authors.

[28] D.A. Dolenc & C.J. Dougherty. DRGs: The Counterrevolution in Financing Health Care. *Hastings Cent Rep* 1985; 15: 19–29; P.J. Boyle & D. Callahan. Managed Care in Mental Health: the Ethical Issues. *Health Aff* 1995; 14: 7–22; C.J. Dougherty. Cost Containment, DRGs, and the Ethics of Health Care. Ethical Perspectives on Prospective Payment. *Hastings Cent Rep* 1989; 19: 5–11.

[29] R. Macklin. Ethical Problems in Rationing Medical Care. *Infect Control* 1985; 6: 375–376; Dolenc & Dougherty, *op. cit.* note 28.

[30] E.H. Morreim. Managed care, Ethics, and Academic Health Centers: Maximizing Potential, Minimizing Drawbacks. *Acad Med* 1997; 72: 332–340; C. Meyers. Managed Care and Ethical Conflicts: Anything New? *J Med Ethics* 1999; 25: 382–387.

[31] D.S. Feldman, D.H. Novack & E. Gracely. Effects of Managed Care on Physician-patient Relationships, Quality of care, and the Ethical Practice of Medicine: a Physician Survey. *Arch Intern Med* 1998; 158: 1626–1632; R.M. Veatch. DRGs and the Ethical Reallocation of Resources. *Hastings Cent Rep* 1986; 16: 32–40.

[32] Dolenc & Dougherty, *op. cit.* note 28; Boyle & Callahan, *op. cit.* note 28; Macklin, *op. cit.* note 29.

[33] Collier, *op. cit.* note 8; D. Hemenway et al. Physicians' Responses to Financial Incentives. *N Engl J Med* 1990; 322: 1059–1063.

[34] Yip et al., *op. cit.* note 4.

[35] World Bank, *op. cit.* note 6.

Table 2. Application of values in the matrix to identify morally relevant empirical findings

Values	*Parameters*	*Empirical findings*
Utility	1. Cost and Efficiency	1.1 Collaborations between departments improved;[36]
		1.2 Length of stay decreased;[37]
		1.3 Medical expenses decreased.[38]
Producing benefits	2. Quality of care	2.1 Quality of care improved;[39]
		2.2 Quality of care remained the same;[40]
		2.3 Quality of care deteriorated;[41]
		2.4 Medical risk (uncertainties, co-morbidity, etc.) increased;[42]
		2.5 Patient satisfaction increased.[43]
Distributive justice	3. Access to care	3.1 Financial burden for the individual patient decreased due to the reduction of medical expense;[44]
		3.2 Physicians more cautious to admit patients with complex symptoms.[45]
Transparency	4. Transparency	4.1 Transparency of medical service and price increased.[46]
Respect	5. Respect for patient's autonomy	5.1 Treatment options limited or inflexible;[47]
		5.2 Patient's choice manipulated towards a certain option.[48]
	6. Respect for patient's individuality and variety	6.1 Insensitive to patients' differences.[49]
Professionalism (and links to above values)	7. Clinical autonomy	7.1 Clinical autonomy restrained by case-based payment.[50]
	8. Patient-physician relationship	8.1 Patient-physician relationship improved;[51]
		8.2 Patient satisfaction increased;[52]
		8.3 Patient trust increased;[53]
		8.4 More conflicts between patients and physicians.[54]
	9. Fidelity and honesty	9.1 Physician's professional ethos improved;[55]
		9.2 Over-treatment decreased and case-based payment promoted rational prescription;[56]
		9.3 Physicians encountered difficulties in seeing patient's interests as primary concern;[57]
		9.4 More focus on self-interest.[58]
	10. Incorruptibility and impartiality	10.1 Physicians encountered difficulties to treat patients equally.[59]
Other (Potential links to above values)	11. Work environment and job satisfaction	11.1 Workload and pressure increased;[60]
		11.2 Working enthusiasm decreased.[61]
Procedural justice	12. Fairness of health care reform procedures	No literature found.

[36] D. Wu. Exploration on Advantage and Disadvantage of Payment according to Categories of Illness. *Chin Health Resour* 2010; 13: 207–208 (Chinese).

[37] X. Mao & B. Yang. Practise the Limited Charge for Single Disease and Alleviate the Burden of the Hospitalized Patients. *Mod Hosp Manag* 2007; 5: 1–3 (Chinese).

[38] Z. Tan, Y. Wang & Y. Chen. Analysis of Effect and Efficiency of Single Disease Inpatients Standard Flow. *Healthc Manag in Jiangsu Province* 2007; 18: 38–40 (Chinese); Y. Tan et al. A Study on the Limiting Expenses Payment of a Single Disease in Qianjiang District Chongqing City. *Chin J Health Policy* 2009; 2: 14–40 (Chinese).

[39] Z. Wei, Q. Meng & Z. Zhang. Case-based Payment with Fixed Price Promotes the Management of Quality of Care in the Scheme of NCMS: Based on the Experience of Case-based Payment with Fixed Price in Shaanxi Province. *Economists* 2009; 4: 25–40 (Chinese).

[40] Tan, Wang & Chen, *op. cit.* note 38.

[41] A. Shen. Analysis of Patient's Psychology under Case-based Payment and Nursing Countermeasures. *Gansu J TCM* 2010; 23: 58–59 (Chinese).

[42] Wu, *op. cit.* note 36; Z. Shao. Experience of Implementing Case-based Payment. *Hosp Manag Forum* 2008; 25: 23–27 (Chinese).

[43] F. Jiang et al. Survey on Patient Satisfaction with Peasants under Different Payment Methods in Henan. *Soft Sci Health* 2012; 26: 12–14 (Chinese); Shao, *op. cit.* note 42.

[44] Tan, Wang & Chen, *op. cit.* note 38; Tan et al, *op. cit.* note 38; Jin, *op. cit.* note 26.

[45] Wu, *op. cit.* note 36; Jin, *op. cit.* note 26.

[46] H. Kang. Thoughts on Implementation of Limited Price Charge for Single Disease. *Chin Health Serv Manag* 2008; 25: 367–368 (Chinese); Shao, *op. cit.* note 42.

[47] X. Zhou et al. The Analysis of the Effect of DRGs in Hepu County of Guangxi Province. *Mod Prev Med* 2006; 33: 2132–2133 (Chinese).

[48] J. Zhou. The Influence of Case-based Payment with Cap Price on Pregnant Women's Decision-making about Delivery. *China Mod Doct* 2008; 46: 126–127 (Chinese).

[49] S. Bin & Q. Deng. Analysis of the Feasibility of Case-based Payment with Cap Price: Survey of Two Hospitals in Guilin. *Price: Theory Pract* 2006; 7: 19–20 (Chinese).

[50] Wu, *op. cit.* note 36; Jin, *op. cit.* note 26.

[51] Wu, *op. cit.* note 36; Jin, *op. cit.* note 26.

[52] Mao & Yang, *op. cit.* note 37.

[53] Y. Zhao, L. Li & Y. Zhao. The Experience of Patients under the Scheme of Case-based Payment with Fixed Price in NCMS. *Guide China Med* 2009; 7: 149–150 (Chinese).

[54] Bin & Deng, *op. cit.* note 49; Jin, *op. cit.* note 26.

[55] W. He, S. Zhang & L. Jin. The Effects and Practice of Case-based Payment with Cap Price in NCMS of Anyang. *Chin Prim Health Care* 2008; 22: 26–27 (Chinese).

[56] Zhao, Li & Zhao, *op. cit.* 45; Shao, *op. cit.* note 42; He, Zhang & Jin, *op. cit.* note 55.

[57] Jin, *op. cit.* note 26.

[58] Jin, *op. cit.* note 26.

[59] Jin, *op. cit.* note 26.

[60] Kang, *op. cit.* note 46; Jin, *op. cit.* note 26.

[61] Shao, *op. cit.* note 42.

The prices of medical services involving high-technology care and the prices of drugs were set higher than their actual cost while the prices of basic care were set lower.[62] Motivated by profit, many hospitals established financial targets for physicians to prescribe profitable and expensive diagnostic tests and medications that may not always benefit the patients.[63] Physicians normally received a low basic salary from the hospital. Additionally they could earn a bonus which could comprise a large proportion of their income when achieving the financial targets.[64] Consequently, over-treatment and over-prescription of expensive but unnecessary services and medications have become widespread in the fee-for-service system.[65] The prevalence of over-treatment might be a sign for an erosion of professionalism in China: some physicians tend to put profit and their own compensation ahead of patients' best interest.[66]

As indicated in the matrix, payment models can affect a physician's professionalism and his or her adherence to ethical codes. When set inappropriately, incentives within the payment system can be a great challenge for physicians to practice in accordance with their professionalism. The fee-for-service system in the Chinese context provides an illustrating example: physicians suffer a loss of income that supports their family's living if they act towards a patient's best interest and do not prescribe excessive, profitable medical services, while doing the opposite – acting against their alleged professionalism – seems to be rewarded within the system.

Case-based payment no longer incentivizes physicians to provide excessive care and thus reduces over-treatment, as confirmed by existing studies.[67] But will it foster professionalism merely by promoting rational prescription as some researchers have expected?[68] The answer seems to be negative. Based on existing studies, case-based payment might have undermined professionalism in other unexpected ways. Many physicians in a recent survey express their concerns that their alleged professional values including clinical autonomy, patients' health as top priority and equal diligence to patients are negatively affected by case-based payment.[69]

It remains a challenging task to understand the effects of financial incentives in payment models on medical professionalism and its subsequent impact on patient care. Financial incentives might be the most effective measure in changing a physician's behavior.[70] Hence, a physician's behavior is driven by professionalism and virtues; while at the same time it is influenced by financial incentives. As a consequence financial incentives may very likely also influence a physician's professionalism.[71] Since medical professionalism, physicians' behavior at the bed side and the influence of financial incentives are so deeply interwoven, it is important to align financial incentives with medical professionalism instead of setting them in opposition.[72] It is recommendable that health policy and guidelines in China aim at the improvement of professionalism and medical virtues under properly designed financial incentive systems.

Patient-Physician Relationship: Enhancing the Trust but also Provoking Conflicts

Trust is a central element in the interaction between patients and physicians, and it is relevant for medical practice to be effective and comforting. However, in some cases trust is impaired between patients and physicians in China; it seems that the public has enormous concerns regarding the fidelity and integrity of physicians and hospitals after the market-oriented health care reform since the 1980s.[73] Frequent and intense verbal or physical conflicts with physicians are observed.[74] Both the physicians and the patients in China experience a strained relationship.[75]

Trust and physicians' fidelity are vital for the patient-physician relationship, and both are important parameters in the matrix. In our view trust is a necessary element regardless of which payment model is implemented. Some researchers contended that the introduction of case-based payment in China can help restore physicians' fidelity and patient trust because of the consequent improvements such as the increase of

[62] Hui, *op. cit.* note 14; Yip et al., *op. cit.* note 4.
[63] Hui, *op. cit.* note 14.
[64] Ibid; Hu et al., *op. cit.* note 3.
[65] Ibid; Yip et al., *op. cit.* note 4.
[66] Hui, *op. cit.* note 14; Yip et al, *op. cit.* note 4.
[67] Zhao, Li & Zhao, *op. cit.* note 53; Shao, *op. cit.* note 42.
[68] L. Chen & Y. Lan. The Single Disease Grows the Price Control Charges: The New Measure to Establish the Harmonious Physician-patient Relationship. *Chin Med Ethics* 2006; 19: 36–38 (Chinese); X. Chen & B. Zeng. The Ethical Value of Single-disease Entity Expenditure-Control in Hospital. *Med Philos(Humanist & Soc Med)* 2008; 29: 49–50 (Chinese).
[69] Jin, *op. cit.* note 26.
[70] W.A. Goodpastor & I.D. Montoya. Motivating physician Behaviour Change: Social Influence versus Financial Contingencies. *Int J Health Care Qual Assur* 1996; 9: 4–9.
[71] M.K. Wynia. The Risks of Rewards in Health Care: How Pay-for-performance Could Threaten, or Bolster, Medical Professionalism. *J Gen Intern Med* 2009; 24: 884–887; M.A. Hendrickson. Pay for Performance and Medical Professionalism. *Qual Manag Health Care* 2008; 17: 9–18.
[72] Hendrickson, *op. cit.* note 35; J.C. Heller. Medical Professionalism, Revenue Enhancement, and Self-Interest: An Ethically Ambiguous Association. *HEC Forum* 2012; 24: 307–315; S. Cruess & J.J. Cohen. Alliance between Society and Medicine: The Public's Stake in Medical Professionalism *JAMA* 2007; 298: 670–673.
[73] Hui, *op. cit.* note 14; Tao, *op. cit.* note 14.
[74] Ending Violence against Doctors in China. *The Lancet* 2012; 379: 1764.
[75] X. Zhang & M. Sleeboom-Faulkner. Tensions Between Medical Professionals and Patients in Mainland China. *Camb Q Healthc Ethics* 2011; 20: 458–465.

transparency, the reduction of medical expense and the elimination of over-treatment.[76] Some studies imply that the patient satisfaction and trust increased after the introduction of case-based payment in China.[77] In our own empirical survey on physicians' perception of case-based payment the majority of the respondents also confirmed the patient-physician relationship had to some extent improved after the implementation of case-based payment.[78] Indeed, unlike the fee-for-service system where physicians are incentivized to boost patients' demand for medical services, case-based payment seems to encourage physicians to practice cost-effective medicine to keep the total cost within the pre-defined price. Therefore, patients may no longer suspect they will be maltreated and over-charged since the medical expense is fixed from the beginning. Their trust in physicians may be restored in the case-based payment system.

The discussion of the effects of managed care on the patient-physician relationship in other countries is somewhat different. Researchers believed that the incentives to cap costs for care are ethically problematic because this might compromise physicians' loyalty and erode patient trust.[79] While some patients in high-income countries may worry that their physicians have not given them the best treatment for the sake of cost control, some patients in China suspect that their physicians have provided them with too much treatment just to make profit. Such suspicion is not groundless considering the prevalence of over-treatment under fee-for-service in China. Therefore, in the specific context of China case-based payment with the similar incentive to cap costs may actually contribute to restoring patient trust because the care withheld in this circumstance would have been more likely to have been unnecessary and paid out-of-pocket.

However, other patients in China might share the worries that are prevalent in high-income countries that the cost constraint in the case-based payment system is problematic. In our survey some physicians expressed their concerns: patients may blame physicians for withholding effective but expensive options if they do not recover as expected during the regular treatment suggested in the case-based payment scheme. Physicians also worry that the increased cost constraint in the case-based payment system might increase medical risk and therefore might result in potential harm to patients and lower confidence in physicians.[80] In this sense, conflicts in the patient-physician relationship may also emerge due to the implementation of case-based payment.

Access to Care: Balancing between the Sick and the Poor

Despite some ambiguity regarding its definition, *access to care* is a crucial indicator in evaluating the performance of a health care system. Here we adopt a model based on livelihood that understands access in five dimensions: availability, accessibility, affordability, adequacy and acceptability.[81] We examine whether case-based payment creates any barriers in the five dimensions of access to care instead of fully assessing the extent of access to care achieved after its implementation.

Our empirical findings are mainly relevant for two dimensions of access: availability and affordability. There are studies suggesting that case-based payment can contribute to reducing barriers in the dimension of affordability. Because a large portion of costs for care are still paid out-of-pocket by patients, economic constraint is one main reason that people do not seek care or require an early discharge in China.[82] The prevalence of over-treatment further increases the unaffordability for patients.[83] Under the case-based payment system, the expense for the disease in the scheme is pre-defined and disclosed to the patients once they are admitted. Thus, over-treatment decreased,[84] medical expenses for the individual patient became lower, and the financial burden of costs for treating the disease was partly relieved for those patients.[85] In this way, case-based payment presumably encourages the utilization of medical services and benefits patients who otherwise cannot afford the treatment.

However, case-based payment might impair the dimension of availability. Some studies suggest that the treatment options were limited under the case-based payment system.[86] This is not ethically problematic as long as the services withheld are not medically necessary or not as

[76] M. Wang. The Single Disease Grows the Tallest Price Control to Consume the Influence Discussion And Analysis the Physician-Patient Relationship in the Medical Treatment. *Chin Med Ethics* 2006; 19: 38–41 (Chinese); Chen & Lan, *op. cit.* note 68.

[77] Mao & Yang, *op. cit.* note 37; Zhao, Li & Zhao, *op. cit.* note 53.

[78] Jin, *op. cit.* note 26.

[79] J. Glasson & C.W. Plows. Ethical Issues in Managed Care: Council on Ethical and Judicial Affairs, American Medical Association. *JAMA* 1995; 273: 330–335.

[80] Jin, *op. cit.* note 26.

[81] B. Obrist et al. Access to Health Care in Contexts of Livelihood Insecurity: A Framework for Analysis and Action. *PLoS Med* 2007; 4: e308.

[82] Center for Health Statistics and Information, Ministry of Health. 2009. *An Analysis Report of National Health Services Survey in China, 2008*. 34–54. Available at: http://www.moh.gov.cn/cmsresources/mohwsbwstjxxzx/cmsrsdocument/doc9911.pdf [Accessed 19 March 2014].

[83] R. Fan. Corrupt Practices in Chinese Medical Care: the Root in Public Policies and a Call for Confucian-Market Approach. *Kennedy Inst Ethics J* 2007; 17: 111–131; Hui, *op. cit.* note 14.

[84] Zhao, Li & Zhao, *op. cit.* note 53; Shao, *op. cit.* note 42; He, Zhang & Jin, *op. cit.* note 55.

[85] Tan, Wang & Chen, *op. cit.* note 38; Tan et al, *op. cit.* note 38; Jin, *op. cit.* note 26.

[86] Zhou et al., *op. cit.* note 47; Kang, *op. cit.* note 46.

cost-effective as the available options.[87] A more crucial issue is that physicians held great caution in admitting sicker patients who might generate costs exceeding the pre-defined price.[88] Avoiding 'costly' patients who are elderly or have complex symptoms has been a persistent concern for prospective payment systems in the international literature.[89] Due to the small amount of robust empirical findings it is difficult to conclude to what extent the dimension of availability is impaired. However, the potential impairment of access to care does not conform to the recent manifesto of the government to achieve equal access to affordable basic care for every Chinese citizen.[90] It is necessary to continue the research to identify whether treatment for certain patients is delayed or even withheld in the case-based payment system.

Patients' Choice: Manipulated by Reimbursement Scheme?

The development and integration of patient autonomy in medicine has been a difficult task in contemporary China where collectivistic values are strongly emphasized officially.[91] But more and more people recognize autonomy and the informed consent of patients as an important right,[92] which has also been stipulated in Chinese law.[93]

The implementation of case-based payment, as suggested by the current empirical studies, can enhance transparency[94] and thus patients' autonomy. Once included in the case-based payment scheme, patients will be notified of the total expense and medical procedures of the treatment. This is different from the fee-for-service system where patients do not have the knowledge of what medical services the physician will prescribe, let alone the aggregation of costs until the treatment is over and they receive the bill. Therefore, due to the increase of transparency, patients are better informed and presumably make more prudent decisions.

However, case-based payment may also inappropriately influence patients' choice. We found one study reporting that the rate for cesarean section doubled from 32.5% (n = 1260) to 65.4% (n = 1880) in a hospital in Hubei after the implementation of case-based payment,[95] while the WHO advocates for the cesarean section rate to be lower than 15%.[96] The study attributed the abnormal increase of cesarean section to the reimbursement criteria of case-based payment. Patients who do not deliver within 24 hours after admission and patients who have episiotomy during vaginal delivery can no longer be included in the case-based payment scheme and have to pay a higher price for the delivery. Most patients thus chose the option of cesarean section in the case-based payment scheme to save money and avoid trouble.[97] Empirical findings for such a development are scarce and it is impossible to generalize. However, this study suggests that case-based payment may influence not only the behavior of providers but also the decision of patients who are nudged to choose a non-indicated medical procedure with unjustified risks involved.

CONCLUSIONS

While there is research focusing on the ethical issues of DRGs in high-income countries, the similar payment model case-based payment in China remains understudied from the ethical perspective. This paper applies and further develops a systematic matrix to assess case-based payment from the ethical perspective based on current empirical findings. It systematically identifies the ethical issues of the provider payment reform from fee-for-service to case-based payment in the Chinese health care system. Moreover, the paper highlights four specific ethical issues of case-based payment related to professionalism, patient-physician relationship, access to care and patient autonomy.

A detailed analysis reveals that case-based payment has both positive and negative ethical implications in the Chinese health care system. We cautiously infer that case-based payment is currently more ethically acceptable than fee-for-service in the particular context of China. Existing empirical findings indicate that case-based payment can reduce over-treatment and thus lower the financial barriers to care which are among the most urgent challenges in the Chinese health care system. However, more rigorous and longitudinal studies should be conducted to confirm these findings. Furthermore, we believe that it will be difficult to fully justify the implementation of case-based payment if no additional measures are taken to monitor and minimize its negative ethical implications identified here.

[87] Boyle & Callahan, *op. cit.* note 28.
[88] Wu, *op. cit.* note 36; Jin, *op. cit.* note 26.
[89] Dougherty, *op. cit.* note 28; Dolenc & Dougherty, *op. cit.* note 28.
[90] W. Yip & W. Hsiao. China's Health Care Reform: A Tentative Assessment. *China Econ Rev* 2009; 20: 613–619.
[91] P.K. Ip. Developing Medical Ethics in China's Reform Era. *Dev World Bioeth* 2005; 5: 176–187.
[92] D. Wang et al. Study on Issues of Informed Consent in the Perspective of Patients: Report of Research on National Questionnaire Survey of 4000 Inpatients in 10 Cities(VIII). *Med Philos(Humanist & Soc Med)* 2011; 5: 38–42 (Chinese).
[93] A. Wuensch et al. Breaking Bad News in China – the Dilemma of Patients' Autonomy and Traditional Norms. A First Communication Skills Training for Chinese Oncologists and Caretakers. *Psychooncology* 2013; 22: 1192–1195.
[94] Kang, *op. cit.* note 46; Shao, *op. cit.* note 42.
[95] Zhou, *op. cit.* note 48.
[96] Appropriate Technology for Birth. *The Lancet* 1985; 326: 436–437.
[97] Zhou, *op. cit.* note 48.

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Supporting Information

Additional Supporting Information may be found in the online version of this article at the publisher's web-site:

Supplement 1