

Human resource development and capacity-building during China's rapid scale-up of methadone maintenance treatment services

Jianhua Li,^a Changhe Wang,^b Jennifer M McGoogan,^b Keming Rou,^b Marc Bulterys^c & Zunyou Wu^b

Problem China's National Methadone Maintenance Treatment Programme (MMT) has expanded from eight clinics serving approximately 1000 clients to 738 clinics that have served more than 340 000 clients cumulatively in only 8 years. This has created an enormous demand for trained providers.

Approach Human resource development and capacity building efforts have been conducted in China's National MMT Programme to create a supply of providers trained in administering MMT for opioid dependence.

Local setting From 2004 to 2007, China's National MMT Programme faced several problems: inappropriately low methadone doses, poor compliance, high concurrent drug use and high drop-out rates among clients, and little experience, little training and high turnover rates among providers.

Relevant changes Training programmes for individual providers and their trainers were redeveloped and expanded in 2008. Although programme performance metrics show an increase in patients' annual mean duration in treatment (93 days in 2004 versus 238 days in 2011), the increase in their mean daily methadone dose (from 47.2 mg in 2004 to 58.6 mg in 2011) is modest.

Lessons learnt Some of the problems that can arise during the development, launch and scale-up of a major national public health effort, such as China's National MMT Programme, cannot be foreseen. Key to the programme's success so far have been the strong commitment on the part of China's government and the optimism and pragmatism of programme managers. Human resources development and capacity-building during scale-up have contributed to improved service quality in MMT treatment clinics and are critical to long-term success.

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Introduction

The injection of illicit drugs and the epidemic of human immunodeficiency virus (HIV) infection to which it contributes are still public health challenges in China.¹ Methadone maintenance treatment (MMT) has become a critical component of broader harm reduction strategies focused on the harms of dependence on illicit drugs, HIV infection and acquired immunodeficiency syndrome (AIDS), and infection with hepatitis C virus. MMT programmes have been credited internationally with several important effects, which include reductions in illicit drug use and high-risk drug-related behaviour, in the incidence and prevalence of HIV infection and in the incidence of hepatitis C virus infection.²⁻⁵ As a result, China has rapidly scaled up MMT nationwide – from eight clinics serving about 1000 clients in 2004⁶ to 738 clinics that had already served over 340 000 clients cumulatively as of the end of 2011. No other country has successfully expanded MMT services in such a short time or to such a degree, and China's National Methadone Maintenance Treatment Programme is now recognized as the largest single opioid agonist maintenance treatment programme in the world.^{7,8}

In addition to the advantages already mentioned, studies have shown MMT programmes to be associated with longer retention in treatment, higher methadone doses and greater availability of ancillary services.^{9,10} The rapid scale-up of MMT services in China created a huge demand for qualified service providers and placed an unanticipated strain on existing providers in MMT clinics, to the detriment of service quality.¹¹⁻¹³

Hence, this enormous shortage of human resources soon became one of the most critical problems faced by managers of the MMT programme. It took great perseverance and effort to try to overcome the shortage. The purpose of this article is to review human resource development and capacity-building efforts within China's National Methadone Maintenance Treatment Programme, illustrate changes in programme performance metrics over time, and convey lessons that we hope will provide guidance to other developing countries attempting to implement similar programmes.

During its early years (2004–2007), China's National Methadone Maintenance Treatment Programme was characterized by very low coverage of the total opioid-dependent population, low average methadone doses (compared with international recommendations), high rates of concurrent drug use among clients, and high client drop-out rates across all sites.⁶⁻⁸ Although the causes of these problems had not yet been examined, their root cause was thought to be that most public health and MMT clinic staff, as well as clients and their families, knew little about the pathophysiology of opioid dependence or about opioid agonist maintenance treatment. This idea is supported by several international studies.^{9,10,14,15} Attempts were being made to address these problems through the National Methadone Maintenance Treatment Training Centre (henceforth national training centre), which had been established in 2005 to offer providers in new MMT clinics basic support and clinical and operational training (Table 1). However, this training programme had low coverage, provided no ongoing education and was limited to a few topics.^{11,12}

^a National Methadone Maintenance Treatment Training Centre, Yunnan Institute of Drug Abuse, Kunming, China.

^b National Center for AIDS/STD Control and Prevention, Chinese Center for Disease Control and Prevention, 155 Changbai Road, Changping District, Beijing, 102206, China.

^c The Global AIDS Programme in China, US Centers for Disease Control and Prevention, Beijing, China.

Correspondence to Zunyou Wu (e-mail: wuzunyou@chinaaids.cn).

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Table 1. **Comparison of topics covered by the National Methadone Maintenance Treatment Training Centre for the training of methadone maintenance treatment (MMT) providers and their trainers, before and since 2008**

Topic	Before 2008	Since 2008
For MMT providers		
An overview of MMT	Yes	Yes
Diagnosis of heroin dependence	Yes	Yes
Treatment of heroin dependence	Yes	Yes
Behavioural and psychological characteristics of people dependent on heroin	Yes	Yes
Overdose prevention	Yes	Yes
Policy support for and administration of MMT programme	Yes	Yes
Pathology of opioid dependence	Yes	Yes
Pharmacology of methadone	Yes	Yes
Key points for MMT education and skills needed	Yes	Yes
Prevention of HIV infection	Yes	Yes
Counselling skills	No	Yes
Motivational interviewing skills	No	Yes
Management of poly-drug abuse	No	Yes
Management of common mental health problems	No	Yes
Reproductive health needs among female patients	No	Yes
Methadone dosage, compliance and retention	No	Yes
Meaning of a positive urine test in an MMT patient	No	Yes
Prevention of hepatitis C virus infection	No	Yes
For trainers of MMT providers		
Role and responsibility of substance abuse counsellor	No	Yes
Drug dependence counselling procedure	No	Yes
Substance abuse assessment and counselling	No	Yes
Motivational interviewing	No	Yes
High-risk situation management	No	Yes
Goal-setting	No	Yes
Refusal skills	No	Yes
Coping with craving for drug	No	Yes
Lapse and relapse prevention and therapy	No	Yes
Management of overdose and poisoning	No	Yes
Time, stress and anger management	No	Yes
Conflict resolution	No	Yes
Strengthening familial support	No	Yes
Prevention of HIV and hepatitis C virus infection	No	Yes
Working with young people and with women	No	Yes
Harm reduction	No	Yes
Supervision and support	No	Yes
Burnout prevention	No	Yes

HIV, human immunodeficiency virus.

In mid-2007, the National Training Centre conducted a survey targeting the 320 MMT clinics that were operating as of the end of 2006. The purpose was to discover barriers and facilitators to providing good service over the long term. A total of 854 staff members from 276 clinics participated. According to the survey, the majority of MMT clinic staff members were highly educated (87.0% had at least a college education) and 91.6% held physician or pharmacist

positions within the clinics – 70.3% as physicians and 21.3% as pharmacists. However, only 63.1% of them (a mean of < 2 providers per clinic) had received training at the national training centre and very few had work experience in rehabilitation for drug dependence or training in psychiatric medicine. Furthermore, most clinics were not fully staffed, as required by MMT programme guidelines, and many had excessive staff turnover. Most of the survey respon-

dents reported feeling underprepared to perform their jobs. More than 80% requested additional training on clinical treatment guidelines, overdose prevention and management, ways to actively involve their clients in treatment, HIV-prevention strategies, and the enforcement of harm reduction measures in MMT service delivery (unpublished findings).

Many of these findings were later corroborated by other surveys of China's MMT programme providers in early 2008.^{11,12} Respondents cited a lack of professional training and development as a problem that kept them from performing their jobs properly, made them reluctant to prescribe higher methadone doses (despite the implementation of improved dosing guidelines), and prevented them from being able to offer supportive services such as psychosocial counselling, skills training, employment assistance, health screening and referrals or incentive programmes. This contributed to their feelings of inadequacy and disdain from other medical professionals, fear of malpractice liability, concern for their personal safety and burnout.^{11,12}

By the end of 2007, 503 MMT clinics had cumulatively served 97 554 clients, of which 57 947 were still in treatment. However, the programme still had to contend with excessively low methadone doses (mean: 45–55 mg daily), low rates of treatment compliance (63% at six months; 48% at one year), and high rates of continued drug dependence on screening (mean: 27–40%).^{8,11} Programme-level metrics derived from the National Methadone Maintenance Treatment Programme's database for the period from 2004 to 2007, summarized in Table 2, support these observations. To solve these persistent problems and move the programme towards professional, high-quality, comprehensive service delivery, clinics needed to be stably staffed with well-trained providers.^{11,12} Thus, the success of MMT service delivery depended on the rapid establishment of human resources development and capacity-building activities.

Approach

In response, the national training centre modified its capacity-building plans in 2008 after performing a situational analysis and skills and capacity assessment of existing clinics, already described, and of the new National HIV/AIDS

Table 2. Trends in 15 National Methadone Maintenance Treatment Programme performance metrics before and after human resource development and capacity-building activities, China, 2004–2011

Performance metric	Before				After			
	2004	2005	2006	2007	2008	2009	2010	2011
No. of clinics in operation	8	58	320	503	600	680	701	738
No. of clients per clinic, mean	110	115	82 ^a	115	156	166	174	190
No. of clients per clinic, range	24–208	2–486	1–732	1–1336	1–1429	1–1338	1–1398	1–1367
Staff to client ratio ^b	1:32	1:4	1:9	1:16	1:20	1:26	1:28	1:34
Cumulative no. of clients	1220	8116	37345	97554	178684	241975	295182	344254
Clients still on treatment as of end of year	878	6676	26165	57947	93773	112831	122032	140102
Annual client retention rate (%) ^c	72.6	70.1	75.8	71.7	69.5	65.6	70.3	74.9
Mean duration in treatment (days) ^d	93	114	120	170	196	216	232	238
Mean daily methadone dose (mg) ^d	47.2	47.4	48.8	49.2	50.7	53.3	56.5	58.6
SE of mean daily methadone dose (mg)	18.3	23.0	23.0	25.4	26.1	27.9	29.8	31.0
Rate of concurrent opioid use (%)	7.6 ^e	12.4 ^e	21.8	23.7	26.4	24.5	24.0	23.6
HIV testing rate (%) ^f	–	–	–	–	–	–	61.6	78.8
HCV testing rate (%) ^f	–	–	–	–	–	–	61.4	77.8
Syphilis testing rate (%) ^f	–	–	–	–	–	–	56.5	76.0
Total annual provider training costs (US\$) ^g	142 000	407 000	442 000	497 000	301 000	322 000	313 000	513 000

HCV, hepatitis C virus; HIV, human immunodeficiency virus; SE, standard error; US\$, United States dollars.

^a Owing to the rapid increase in the number of clinics that opened in 2006, this mean is lower than the mean in previous and subsequent years. Before 1 July 2006, this mean was 106; after 1 July 2006 it dropped to 53.

^b Staff-to-client ratios are for Yunnan province only; these data are not yet available at the national level.

^c To calculate the annual client retention rate, we divided the total number of clients who received at least one methadone dose in December by the total number of clients who had received at least one methadone dose during the entire year (minus those who had died).

^d The Pearson Correlation coefficient *t*-test showed a statistically significant increase over time ($P < 0.0001$).

^e Rates of concurrent drug use are artificially low in 2004 and 2005 because monthly random urine opioid tests were not carried out consistently. The problem was resolved by strictly implementing random urine opioid testing in late 2005.

^f No data on testing for HIV infection, hepatitis C virus infection or syphilis were available before 2010.

^g Currency conversion rates used: US\$ 1 = 8.27 yuan renminbi (CNY) in 2004; US\$ 1 = 8.07 CNY in 2005; US\$ 1 = 8.01 CNY in 2006; US\$ 1 = 7.51 CNY in 2007; US\$ 1 = 6.82 CNY in 2008–2010; US\$ 1 = 6.33 CNY in 2011.

Strategy and China's Eleventh Five-Year Plan for Key Science and Technology Research Projects. This resulted in the development and implementation of a new technical training programme for MMT service providers that focused on four main goals:

- i) ensuring that every new MMT clinic had at least two staff members trained by the national training centre before opening;
- ii) seeing to it that the national training centre delivered psychosocial support training to service providers, as needed, to strengthen their skills and ability to offer quality services;
- iii) increasing training coverage and skill building and improving service quality by getting the national training centre to offer training of trainers to core MMT providers in each province. These constituted a small group with the skills and knowledge needed to train new or less experienced staff in the provinces;
- iv) getting the national training centre to prepare selected technical experts to conduct week-long field visits to

new clinics to provide on-site technical support and performance coaching to service providers.

Training for individual providers at the national and provincial levels was expanded to cover a broader range of topics (Table 1). The national training centre carefully selected 31 providers to train the trainers who would later be responsible for ongoing provider training in the provinces. Three training of trainers' sessions on an expansive list of topics took place between March 2010 and January 2011 (Table 1). Participants who received certification after passing a rigorous examination became part of the technical resource pool and conducted training in their provinces.

Results

Table 2 summarizes the annual national-level performance metrics of the National Methadone Maintenance Treatment Programme from 2004 to 2011. As shown, some metrics improved during this period. For example, increases in

staff-to-client ratios, mean number of clients per clinic, and mean duration in treatment (93 days in 2004 versus 238 days in 2011) all indicate improved provider capacity and service quality. However, many opportunities for improvement still exist. For instance, the mean daily methadone dose increased by only 20% (47.2 mg in 2004 versus 58.6 mg in 2011) and is still far below international recommendations. Similarly, little improvements were seen in MMT client retention rate and continued concurrent use of illicit opioids.

Because this study is merely descriptive and observational in nature, we cannot make claims regarding causality. However, improvements coinciding with changes in provider training after 2008 suggest that the human resources development and capacity building activities undertaken within China's National Methadone Maintenance Treatment Programme exerted a positive influence in this respect. Additional research is required to determine causality. The results of surveys of MMT providers that are in the planning stage will make

Box 1. Summary of main lessons learnt

- It is not possible to foresee all the problems that can arise during the development, launch and scale-up of a major national public health effort, such as China's National Methadone Maintenance Treatment Programme.
- Strong government commitment and an optimistic attitude and pragmatic approach on the part of National Methadone Maintenance Treatment Programme managers have been key to the programme's success so far.
- Human resources development and capacity-building during programme scale-up directly affects service quality in methadone maintenance treatment clinics and is critical to long-term success.

it possible to assess and further improve the new training programme.

Lessons learnt

Several valuable lessons were learnt during the scale-up of China's National Methadone Maintenance Treatment Programme (Box 1). The urgent need for extensive human resources development and capacity building within China's National MMT Programme arose unexpectedly. However, the strong commitment of China's government to ensuring the success of the programme and the optimism and pragmatism of the programme's managers have been key to the results seen so far. Furthermore, programme managers have continued to push forward despite barriers; they have learnt by doing and have solved

problems as they arose by making incremental improvements and not losing sight of the goals. The many challenges involved in establishing, maintaining and improving the quality of provider services during the launch and rapid scale-up of a large national MMT programme are not unique to China. Although further research in this area is required and many opportunities for improvement still exist, the lessons presented here can add value to the planning and implementation of similar national MMT programmes around the world, particularly in other Asian countries and in countries of Africa, eastern Europe and the Middle East. ■

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Competing interests: J Li is the director of the National Methadone Maintenance Treatment Training Centre. Z Wu is the director of the Secretariat of the National Methadone Maintenance Programme and the director of the National Centre for AIDS/STD Control and Prevention. Both have been directly involved in the development and scale-up of the National Methadone Maintenance Programme in China.

ملخص

تنمية الموارد البشرية وبناء القدرات أثناء الزيادة السريعة لخدمات العلاج الصياني بالميثادون في الصين المشكلة توسع البرنامج الوطني الصيني للعلاج الصياني بالميثادون من ثماني عيادات تحدم 1000 عميل إلى 738 عيادة خدمت أكثر من 340000 عميل على نحو تراكمي خلال 8 سنوات فقط. وهو ما أسفر عن طلب هائل على مقدمي الخدمة المدربين. الأسلوب تم القيام بجهود تنمية الموارد البشرية وبناء القدرات في البرنامج الوطني الصيني للعلاج الصياني بالميثادون لتهيئة الإمداد بمقدمي خدمة مدربين على إدارة العلاج الصياني بالميثادون (MMT) المعتمد على المواد الأفيونية المفعول. المواقع المحلية في الفترة من 2004 إلى 2007، واجه البرنامج الوطني الصيني للعلاج الصياني بالميثادون عدة مشكلات، هي: انخفاض جرعات الميثادون على نحو غير ملائم، وضعف الامتثال، وزيادة الاستخدام المترامن للأدوية وزيادة معدلات التسرب بين العملاء، وقلة الخبرة، وقلة التدريب وزيادة معدلات التنقل بين مقدمي الخدمة. التغييرات ذات الصلة تم إعادة تطوير برامج التدريب لمقدمي

الخدمة الفرديين ومدربهم وتوسيعها في عام 2008. وعلى الرغم من أنه يتضح من قياسات أداء البرامج وجود زيادة في متوسط المدة السنوية للمرضى في العلاج (93 يوماً في 2004 مقابل 238 يوماً في 2011)، فإن الزيادة في متوسط جرعة الميثادون اليومية (من 47.2 مليغرام في 2004 إلى 58.6 مليغرام في 2011) متواضعة. الدروس المستفادة لا يمكن التكهن ببعض المشكلات التي يمكن أن تنشأ أثناء تنفيذ جهد وطني رئيسي في مجال الصحة العمومية وإطلاقه وزيادته، مثل البرنامج الوطني الصيني للعلاج الصياني بالميثادون. ولا يزال الالتزام القوي من جانب الحكومة الصينية والتفاؤل والطابع العملي لدى مديري البرنامج حتى الآن عوامل رئيسية في نجاح البرنامج. وأسهمت تنمية الموارد البشرية وبناء القدرات، أثناء الزيادة في خدمات العلاج الصياني بالميثادون، في تحسين نوعية الخدمة في عيادات العلاج الصياني بالميثادون كما أن لها أهمية بالغة في تحقيق النجاح على الأمد الطويل.

摘要

中国在迅速发展美沙酮维持治疗服务过程中的人力资源开发和能力建设

问题 中国的国家美沙酮维持治疗 (MMT) 方案不断扩大, 仅在8年时间内就从服务约千名患者的八个诊所发展到累计服务超过34万名患者的738个诊所。这产生了对经过培训的医疗服务人员的巨大需求。

方法 中国的国家MMT方案已经在开展人力资源开发和能力建设的工作, 以此输送经过培训的医疗服务人员, 管理针对阿片类药物依赖的MMT。

当地状况 从2004年到2007年, 中国的国家MMT方案面临着几个问题: 美沙酮剂量偏低、依从性差、合并用药多、患者脱落率高以及医疗服务人员经验少、接受的培训很少、离职率高。

相关变化 2008年, 各个医疗服务人员及其培训师的培训

方案得到重建和扩大。尽管方案效果指标显示, 患者治疗的年平均时间增加 (2004年93天, 2011年238天), 而平均每日美沙酮剂量的增加 (从2004年的47.2毫克增加至2011年的58.6毫克) 适度。

经验教训 在开发、启动和推广国家重大公共卫生工作 (如中国的国家美沙酮维持治疗方案) 中可能出现的一些问题无法预见。到目前为止, 保证方案成功的关键一直在于中国政府强有力的承诺以及方案管理者的乐观精神和务实态度。在推广过程中, 进行人力资源开发和能力建设有助于提高MMT治疗诊所的服务质量, 对取得长期成功非常关键。

Résumé

Développement des ressources humaines et renforcement des compétences lors du développement rapide et à grande échelle des services de traitement de maintien à la méthadone en Chine

Problème Le programme national chinois de traitement de maintien à la méthadone est passé de 8 hôpitaux traitant environ 1 000 patients à 738 cliniques qui ont suivi plus de 340 000 patients au total en seulement 8 ans. Cela a généré une énorme demande en prestataires expérimentés.

Approche Le développement des ressources humaines et des efforts de renforcement des compétences ont été menés par le programme national chinois de traitement de maintien à la méthadone (TMM) afin de proposer des prestataires formés à la gestion du TMM en termes de dépendance aux opiacés.

Environnement local De 2004 à 2007, le programme national chinois de TMM s'est heurté à divers problèmes: doses de méthadone inadéquatement faibles, observance médiocre, importante consommation simultanée de drogues et taux d'abandon élevés chez les patients, faible expérience et taux de renouvellement élevé des prestataires.

Changements significatifs Des programmes de formation pour les prestataires et leurs formateurs ont été élaborés et développés en 2008.

Bien que des mesures de performance du programme montrent une augmentation de la durée moyenne annuelle du traitement des patients (93 jours en 2004 pour 238 jours en 2011), l'augmentation de leur dose quotidienne moyenne de méthadone est modeste (de 47,2 mg en 2004 à 58,6 mg en 2011).

Leçons tirées Certains problèmes qui peuvent survenir lors du développement, du lancement et de l'application à grande échelle d'un effort national majeur dans le domaine de la santé publique, tel que le programme national chinois du traitement de maintien à la méthadone, ne peuvent être prévus. À ce jour, les clés du succès du programme sont l'engagement marqué de la part du gouvernement chinois ainsi que l'optimisme et le pragmatisme des responsables du programme. Le développement des ressources humaines et le renforcement des compétences lors du développement à grande échelle ont contribué à une amélioration de la qualité du service dans les cliniques de TMM et sont essentiels pour une réussite à long terme.

Резюме

Быстрое распространение метадонной поддерживающей терапии в Китае: развитие кадровых ресурсов и создание потенциала

Проблема Национальная программа Китая по метадонной поддерживающей терапии была расширена с восьми клиник, обслуживающих приблизительно одну тысячу пациентов, до 738 клиник, которые в совокупности обслужили более 340 000 пациентов только за восемь лет. Это привело к огромной потребности в квалифицированных специалистах.

Подход В рамках Национальной программы Китая по метадонной поддерживающей терапии были предприняты усилия по развитию кадровых ресурсов и созданию потенциала для обеспечения специалистами, обученными назначению метадонной поддерживающей терапии (МПТ) для лечения опиоидной зависимости.

Местные условия С 2004 по 2007 гг. Национальная программа Китая по МПТ столкнулась с несколькими проблемами, такими как: нецелесообразно низкие дозы метадона, несоблюдение режима терапии, одновременное широкое использование лекарственных препаратов и высокий процент отсеявшихся пациентов, а также небольшой опыт, недостаточное обучение и большая текучесть специалистов.

Осуществленные перемены Обучающие программы для отдельных специалистов и их инструкторов были переработаны и расширены в 2008 году. Несмотря на то, что показатели выполнения программы указывают на увеличение средней годовой длительности лечения пациентов (93 дня в 2004 году по сравнению с 238 днями в 2011 году), увеличение средней ежедневной дозы метадона пациентов (с 47,2 мг в 2004 году до 58,6 мг в 2011 году) является незначительным.

Выводы Некоторые проблемы, которые могут возникнуть во время разработки, запуска и развития больших программ общественного здравоохранения подобно Национальной программе Китая по метадонной поддерживающей терапии, невозможно предусмотреть. До сих пор ключевым фактором успешности программы были глубокая приверженность со стороны китайского правительства, оптимизм и прагматизм руководителей программы. Развитие кадровых ресурсов и создание потенциала во время расширения программы способствовали улучшению качества обслуживания в клиниках, проводящих МПТ, и являются важными для обеспечения долговременного успеха.

Resumen

Desarrollo de los recursos humanos y creación de capacidad en relación con el rápido aumento en China de los servicios de tratamiento de mantenimiento con metadona

Situación El Programa Nacional para el Tratamiento de Mantenimiento con Metadona de China ha pasado de tener ocho clínicas que atendían a aproximadamente 1000 clientes a 738 clínicas con un total acumulado de más de 340 000 clientes atendidos en sólo ocho años, lo que ha creado una demanda enorme de proveedores de servicios cualificados.

Enfoque Los esfuerzos para el desarrollo de los recursos humanos y la creación de capacidad adecuada han llevado al Programa Nacional para el TMM de China a crear un programa para aportar proveedores cualificados capaces de administrar el tratamiento de mantenimiento con metadona (TMM) para la dependencia de opiáceos.

Marco regional Desde el año 2004 hasta el 2007, el Programa Nacional para el TMM chino tuvo que hacer frente a numerosos problemas: dosis inadecuadamente bajas de metadona, cumplimiento deficiente del programa, elevado uso simultáneo de drogas, tasas altas de abandono entre los clientes, falta de experiencia y de formación, así como índices elevados de rotación entre los proveedores de servicios.

Cambios importantes En el año 2008 se volvieron a diseñar y

se aumentaron los programas de formación para los proveedores individuales, así como para sus instructores. Aunque las mediciones del rendimiento del programa muestran un aumento de la duración media anual del tratamiento de los pacientes (93 días en 2004 frente a 238 días en 2011), el aumento de la dosis diaria de metadona (de 47,2 mg en 2004 a 58,6 mg en 2011) resulta moderado.

Lecciones aprendidas No es posible prever todos los problemas que pueden surgir durante el desarrollo, el lanzamiento y la expansión de un esfuerzo de tal relevancia en materia de salud pública nacional como es el Programa chino para el Tratamiento de Mantenimiento con Metadona. Las claves para el éxito del programa han sido, hasta ahora, el fuerte compromiso por parte del gobierno chino, así como el optimismo y el pragmatismo de los gestores del programa. El desarrollo de los recursos humanos y la creación de capacidad durante su proceso de expansión han contribuido a mejorar la calidad del servicio en las clínicas de TMM y son fundamentales para el éxito a largo plazo.

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