

# **Ex-Post Evaluation Report**

## **Provisions of Medical Equipment for Maternal and Child Health in Nanjing of China**

**September 2002**

**Japan International Cooperation Agency  
Planning and Evaluation Department**

The opinions expressed in this report are those of the authors and do not necessarily represent the views of the Japan International Cooperation Agency (JICA).

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## Preface

In regard to the ODA evaluation, it has been pointed out that the establishment of a consistent evaluation system from the preliminary stage to ex-post is important. Therefore, JICA has been implementing full-fledged ex-ante evaluations for each project-type technical cooperation project<sup>1)</sup>, grant aid project and development study since fiscal 2001 after going through an experimental introduction in fiscal 2000. On the other hand, terminal evaluation has been implemented for each project—mainly project-type technical cooperation projects—in the past. However, the effects arising at a certain period after the end of the cooperation (impacts) and sustainability at that time have not necessarily been verified or analyzed. In order to implement projects more efficiently and effectively, it is important to conduct ex-post evaluation for each project and to also give feedback of the evaluation results to the recipient countries.

Against this background, it was determined that the “ex-post evaluation for individual projects” would be implemented for project-type technical cooperation projects and grant aid projects from fiscal 2002. In preparation for full-fledged implementation, the evaluation was experimentally implemented for Indonesia and China in fiscal 2001. The knowledge acquired through the evaluation was organized to prepare the “Manual for Implementing Ex-post Evaluation for Individual Projects (Compendium of Case Studies).” This report is a compilation of the results of ex-post evaluations for projects that were subject to experimental implementation<sup>2)</sup>.

In the past, the monitoring survey (post-project monitoring) had been carried out for project-type technical cooperation projects, grant aid projects and the independent provision of equipment (already abolished as a cooperation form) at a certain period after the end of cooperation (after two years and six years). Materials acquired through post-project monitoring have been utilized to consider the implementation of follow-up cooperation. The new “ex-post evaluation for individual projects” is a progressive reorganization of the “post-project monitoring.” In the survey, post-project conditions are surveyed and an evaluation is made, as mentioned above, through the more comprehensive survey and analysis of the effects of cooperation and sustainability by the recipient countries.

September 2002

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Managing Director of the Planning and Evaluation Department

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<sup>1)</sup> The name was changed to “technical cooperation project” in fiscal 2002.

<sup>2)</sup> Three ex-post evaluations (two for project-type technical cooperation and one for grant aid cooperation) were implemented in Indonesia and China respectively, and separate reports were made.

Jiangsu Province Maternal and Child Health and Medical Center



a room for X-ray photography



a bone densitometer



a resuscitator



an operating room

Maternal and Child Health Center in Yangzhou



hearing from the director

One of prefectural maternal and child health center



hearing

# 1. The Outline of the Ex-post Evaluation Study

## 1-1 Background and the Purpose of the Study

In 1995 the Jiangsu Province Maternal-Child Health Center, which plays the central role in maternal and child health in Jiangsu Province, began to be rebuilt. However, due to the financial difficulties of the Jiangsu Province government, grant aid was requested to the Japanese government. The request included equipment essential in tertiary medical services for maternal and child health and equipment used in training medical practitioners in maternal and child health. This grant covered not only the supply of equipment for the Center, but regional development cooperation selecting as pilot sites the maternal and child health centers and institutes in all cities and 15 prefectures to create a referral system for maternal and child health in the entire Jiangsu Province.

The ex-post evaluation study, which is to start in a full scale from FY 2002, has been conducted in China and Indonesia in trial basis. The objectives of this study are to verify mainly the sustainability and impact of some projects after certain periods have past since the completion of JICA cooperation. Through the activities above, this study seek to obtain lessons in order to utilize them to feed back for the formulation of similar projects in the future. The projects were selected base on the following criteria:

- Project-type technical cooperation and grant aid
- Project after 3 to 6 years have past
- Project which was not covered by the ex-post evaluation by Ministry of foreign affairs or JICA in three years

## 1-2 Evaluation Team and the Study Period

Name (Affiliation)	Responsibility
Chihiro Oishi (JICA China Office)	Team leader
Kazuhiro Yoshida (Office of Evaluation and Post-project Monitoring, Planning and Evaluation Department, JICA Head Office)	Evaluation planning
Tsuyoshi Ito (IC Net Limited)	Analysis of post-project evaluation
Liu Ran (JICA China Office)	Interpretation, study assistance
Li Wei (Beijing Manyo Consultants Co. Ltd.)	Analysis of post-project evaluation (local consultant)

Field study in China was carried out from February 24 to March 9, 2002. During this period, field study for this project was carried out from February 28 until March 3.

## 2. Study Methods

### 2-1 Outline of the Project

Framework of the project is shown below. The wording with underline was positioned as goals in the project documents, but without any verifiable indicators. In order to complement this, objective figures and other related indicators in China's national policies and Jiangsu Prefecture's development plan were added here.

Overall goal	<p><u>Maternal-child health service network functions in the entire Jiangsu Province.</u></p> <ul style="list-style-type: none"> <li>• Non-target prefectural Maternal-child health centers in the province maintain facilities and personnel similar to that of the prefectural health centers selected as pilot sites.</li> <li>• Referrals between maternal-child health centers function appropriately in all regions of the province.</li> <li>• Referrals to general hospitals function appropriately in all regions of the province.</li> </ul> <p><u>State of maternal-child health in the province improves.</u></p> <ul style="list-style-type: none"> <li>• Maternal mortality rate falls 25 to 30% compared to 1990 by 2000.</li> <li>• Infant mortality rate falls to the one-third of the current figure.</li> <li>• By 2000 the child mortality rate for one to four year-olds drops 30% from 1990 level.</li> <li>• By 2000 the perinatal mortality rate falls 20% from 1990 level.</li> <li>• By 2000 the institutional delivery rate reaches 100% in urban areas and over 95% in rural areas.</li> <li>• Newborn tetanus is wiped out.</li> <li>• 90% of pregnant women are covered by health and medical services by 2000.</li> </ul>
Project purpose	<p><u>Contribution to establishing the network of Jiangsu Province's Maternity and child health services, with the Nanjing Maternity and Child Medical Center at the top</u></p>
Output	<ul style="list-style-type: none"> <li>• Diagnostic and medical services at the Nanjing Maternity and Child Medical Center are appropriate.</li> </ul> <p>Maternity-child health and medical practitioners are trained at the Nanjing Maternity and Child Medical Center.</p> <ul style="list-style-type: none"> <li>• Health and medical services improve at the targeted city and prefectural maternal-child health centers.</li> <li>• Referrals between health centers selected as pilot sites function appropriately.</li> <li>• Referrals to general hospitals function appropriately.</li> </ul>

Input	<p><b>Jiangsu Province Maternal and Child Health and Medical Center:</b></p> <ul style="list-style-type: none"> <li>• Basic equipment raised the capacity of tertiary services in diagnosis and treatment department.</li> <li>• Necessary equipment for personnel training in preventative and clinical medicine in the training department.</li> <li>• Short-term training in the use and maintenance of introduced equipment.</li> <li>• Center facilities.</li> <li>• Center staff members.</li> </ul> <p><b>City and prefectural maternal-child health centers</b></p> <ul style="list-style-type: none"> <li>• Equipment enabling the improvement of primary and secondary medical services in regions.</li> <li>• Short-term training in the use and maintenance of introduced equipment.</li> <li>• Facility renovations and expansions necessary for appropriate installment of the introduced equipment.</li> </ul> <p>The Japanese government supported for the supply of medical equipment totaling 1.728 billion yen. The respective government in Jiangsu Province built targeted facilities and carried out expansions and renovations worth 1.2 hundred million yuan. Of this, the Jiangsu Provincial government invested 72.58 million yuan in building the provincial maternal-child health center and accepted 70 million yuan in medical and training equipment since it will be the project's main organization. The remaining equipment was distributed to the 28 health centers and institutes at the city and prefecture level.</p>
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## 2-2 Stakeholders and Study Methods

In this evaluation study, the project framework described above was prepared based on the existing documents and the results of an interview with the Japanese consultant in charge of the basic planning study of this project. Using this framework, a study plan and questionnaires were prepared in advance of the field study. The specific study framework and study methods in the field study are as described below.

Table: Study targets and study methods

Study target	Study method
<u>Responsible agency</u> Jiangsu Health Agency	Hearings based on the evaluation questionnaires.
<u>Implementing agency</u> Jiangsu Maternal and Child Health Center	Request for data collection; Hearings based on the evaluation questionnaires; Focus group discussions.
<u>Other related institutions and organizations</u> Maternal-child health centers and institutes in targeted cities and prefectures Users (patients of) Maternal-child health centers and institutes in non-targeted cities and prefectures.	Hearings based on the evaluation questionnaires; Survey study. Hearings based on the evaluation questionnaire; Survey study; Semi-structured interviews



### 3. Study Results

#### 3-1 Sustainability

##### (1) Current Situation of Counterpart Personnel

The Provincial Maternal-Child Health Center currently has 85 employees (43 doctors, 23 nurses, 8 clinical exam technicians and 11 administrators), which is only 15% of the 560-person system initially planned. Accordingly, a second recruitment (approximately 90 people) is being implemented. The Center has 19 divisions in the health department and 30 in the clinical department, and it is not easy to run full-scale operations with the current scale of personnel. There are many young employees, with 66 of the employees graduates from four-year colleges. This second recruitment is concentrating on attaining doctors with many years of experience. Chinese doctors—and in particular, doctors with a great deal of experience—tend to lack motivation to leave their current well-equipped hospitals to come to a new hospital, so it is predicted that it will be difficult this time as well to find personnel. The Center is looking into the possibility of inviting doctors to come after they retire or forming contracts with doctors at other hospitals to have them to the Center regularly.

The Center's personnel budget currently come from the provincial government, and as patients increase the government increases the money allotted for the personnel expenses. In other words, with its current state of a few patients, it is difficult for the Center to build up a system for full-scale operations.

Personnel are employed in the health centers at the city and prefectural level (the health centers and institutes targeted in the project) on average as seen below; there have been no problems.

Average number of personnel at the city and prefectural health centers and institutes targeted in the project

	Doctors	Nurses	Clinical examination technicians	Medical administrators	Other administration divisions	Total
Cities (13)	65	101	21	25	37	249
Prefectures (15)	22	7	4	10	5	48

## (2) Organizational Aspects

Actual start of the outpatient services at the Provincial Maternal-Child Health Center was delayed until December 2001, due to difficulties in employing personnel as described above. Increase in the number of patients is still stagnant, and since the provincial government only assists the center with personnel expenses commensurate with the number of patients as explained above, it is going to be difficult to begin full-scale operations with full personnel as planned. The Center's future development depends on improving recognition among the patients and securing talented doctors.

## (3) Financial Aspects

Maternal-child health has two divisions—health and medical care—but the health division is operated using government funds since it does not levy medical fees. Without many patients and few achievements in the medical care division, the Center depends on the provincial government for most of its budget. It is uncertain whether or not financial independence will improve as the number of patients increases in the future. The Center is new and its managerial skill is not certain.

The city health center has a medical care division and revenue from medical care fees. Project seems to have increased number of patients and medical care revenue in general, but clear evidence was not obtained in this study.

The financial conditions of the prefectural health centers whose main work is regular examinations and health consultation, but are not involved with childbirth, are greatly dependent on the financial conditions of their prefectural governments.

## (4) Technical Aspects

Short-term training regarding use of provided equipment is conducted at all the levels. The problems with some of this equipment are described below. However, there were no significant problems at the city and prefectural health centers. At the provincial level, there are cases in which some of the equipment functions were not known because of insufficient training.

Target	Equipment	Problem
Provincial center	Thermal printer	Documents printed on thermal paper are not recognized as official documents for medical records in China.
	Dental examination table	A replacement of grinding needles is difficult to obtain.
	Cryosurgery machine	The shape of liquid nitrogen tanks is different than the Chinese one, and its use also differs from general use in China.
City and prefecture	Newborn resuscitation machine	The prefectures are not involved in childbirth at present.
	Cryosurgery machine	Infrequently used.
	Dental examination table	The water is very hard so it is easy for the drainage hoses and pipes to get clogged.
	Surgical light	It is difficult to obtain a replacement bulb; a bulb that could be obtained is now being used instead.

The equipment at the provincial center is used primarily for research activities and not frequently used for medical care purpose. At this point technical sustainability related to the use of newly introduced equipment could not be evaluated. The maintenance and management system for the equipment is comparatively good, but the possibility of updating the equipment differs widely depending on the financial conditions of the regional government. There are cases in which a financially troubled prefectural health center will request help from the provincial center when there is a breakdown or problem on their equipment. Although it is different from ordinal referrals, the provincial center acknowledges that it offers services other than technology dissemination to centers at lower levels.

#### (5) Sustainability of Project Effects

The Sustainability of the Project differs from completion to present is expressed below.

(↗ : very high, → : maintained, sustained, ↘ : lower than at completion.)

- 1) The Nanjing Maternal-Child Health and Medical Center carries out appropriate diagnostic and medical services.

Sustainability:

The Center did not open for outpatients until December 2001, and the number of outpatients and inpatients has not increased yet. In the three years since the project completed, the health center dealt with about 3,000 juvenile health examinations, almost 500 female mammary gland complaints, about 2,300 normal check-ups, 13 hospitalized patients and 12 patients transferred from local health centers. The number of examined patients and examinations is quite low considering that the center is an institution with tertiary level medical facility.

In the first recruitment, approximately 100 people were hired, but many were young, with 66 being graduates of four-year colleges.

2) The Center’s equipment is used and managed appropriately.

Sustainability: ↗

After the project, the provincial Maternal-Child Health Center’s medical facilities met the conditions set by the government as a tertiary medical facility. According to the Center’s explanation, the equipment use rate is 70% overall, and according to group discussions, the equipment is mostly used in research divisions.

3) The Nanjing Maternal-Child Health and Medical Center trains practitioners in maternal-child health and medicine.

Sustainability: ↗

Training activities for health staff of the city and prefectural health centers continued after the Project completion as seen in the table below. This evaluation study did not cover the trainees from city and prefectural health center, but the training activities were clearly held more often. Since many of the provincial health center’s employees are young, this training is implemented by inviting external instructors.

Table: Number of training sessions at the Provincial Maternal-Child Health Center and number of participants

Year	1998	1999	2000	2001	Total
Number of study groups and training classes	7	11	13	19	50
Number of participants	555	867	1,039	1,498	3,959

4) Health and medical services improve at maternal-child health centers at the city and prefecture level.

Sustainability: ↗

The statistical data from two city health centers and three prefectural health centers showed that the number of patients increased after the equipment was provided. According to the interviews survey, this can be attributed to the reliability of Japanese equipment, the increase in examination items due to equipment input, and the popularity among patients of the echo and Doppler heart sound diagnostic machine.

However, some of the statistical data may have technical problems as seen in the graph below (the underlined

sections). As there are numbers of health centers that do not have data of the circulation figures of maternal and child health handbooks, there are systematic problems regarding the statistical data collection. Since 2001 there have been efforts to improve the statistical data collection system under the guidance of the provincial maternal-child health center, but the reliability problems with the statistical data will continue for a while.

Table: Number of outpatients at targeted city health centers and circulation figures for maternal and child health handbooks

City	Number of patients				Circulation figures for maternal and child health handbooks			
	1998	1999	2000	2001	1998	1999	2000	2001
1	13,368	11,798	14,637	16,733	n.d.	400	300	n.d.
2	106,038	113,521	182,982	195,701	n.d.	n.d.	n.d.	n.d.
3	7,450	21,669	25,821	28,177	n.d.	n.d.	n.d.	n.d.
4	4,892	4,642	5,100	4,520	<u>8,000</u>	<u>8,300</u>	<u>8,500</u>	<u>8,200</u>
5	15,200	15,600	15,400	16,200	<u>4,200</u>	<u>4,000</u>	<u>4,100</u>	<u>4,500</u>
6	10,086	12,110	14,880	7,385	n.d.	n.d.	n.d.	n.d.
7	8,920	9,326	<u>1,282</u>	<u>1,582</u>	1,320	2,130	2,046	2,243
8	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
9	<u>21,000</u>	<u>26,000</u>	<u>34,000</u>	<u>46,000</u>	<u>15,000</u>	<u>18,000</u>	<u>24,000</u>	<u>27,000</u>
10	35,113	22,909	24,228	32,481	<u>1.5</u>	<u>2</u>	<u>2</u>	<u>2.5</u>
11	<u>9,000</u>	<u>8,200</u>	<u>7,800</u>	<u>7,500</u>	<u>9,000</u>	<u>8,200</u>	<u>7,800</u>	<u>7,500</u>
12	18,654	14,012	15,000	16,001	<u>980</u>	<u>1,300</u>	<u>1,500</u>	<u>1,600</u>
13	n.d.	n.d.	n.d.	n.d.	8,640	8,626	9,500	9,700
Total	249,721	259,787	341,130	372,280	47,141.5	50,958	57,748	60,745.5

Table: Number of outpatients at targeted prefectural health centers and circulation figures for maternal and child health handbooks

Prefecture	Number of patients				Circulation figures for maternal and child health handbooks			
	1998	1999	2000	2001	1998	1999	2000	2001
1	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
2	25,406	50,401	49,465	48,634	3,094	2,961	3,077	2,715
3	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
4	<u>39,000</u>	<u>43,000</u>	<u>51,000</u>	<u>55,000</u>	8,924	13,944	16,471	19,480
5	4,270	10,187	14,869	17,088	3,261	2,952	2,970	2,913
6	<u>12,000</u>	<u>13,000</u>	<u>15,000</u>	<u>15,000</u>	<u>9,000</u>	<u>9,000</u>	<u>9,000</u>	<u>8,500</u>
7	12,020	13,700	14,699	19,775	2,020	2,006	1,996	1,860
8	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
9	30,552	38,196	46,580	58,225	n.d.	n.d.	n.d.	n.d.
10	3,387	4,796	11,130	7,234	n.d.	n.d.	n.d.	n.d.
11	28,436	32,890	32,321	38,456	n.d.	n.d.	n.d.	n.d.
12	16,078	21,858	25,151	24,860	<u>12,600</u>	<u>14,200</u>	<u>16,500</u>	<u>15,300</u>
13	3,416	3,507	3,625	3,710	2,204	5,247	3,935	4,418
14	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
15	19,678	28,767	28,527	29,433	5,246	9,027	8,729	8,461
Total	194,243	260,302	292,367	317,415	46,349	59,337	62,678	63,647

5) The city and prefectural health centers' equipment is appropriately used and maintained.

Sustainability: →

The management conditions observed at the health centers and institutes are generally good. There were difficulties with some equipment, but there were no problems affecting the service standards.

6) Referrals between health centers selected as pilot sites are appropriately carried out.

Sustainability: not known

As can be seen from the graph below, there were few changes in the system before and after the project. However, it appears that more accurate referrals have been made possible by improvements in the facilities, equipment and technology at each level. Most of the prefectural health centers are not involved in childbirth, and in these cases childbirth generally takes place in a location close to the pregnant woman's home, including the village sanitation institutes. Referrals between maternal-child health centers are not just vertical lines, and the two lines for sanitation institutes and general hospitals run parallel, reflecting the reality that each health center and institute links to the appropriate place in its region. This is not a fault in the referral system, but the Provincial Maternal-Child Health Center's medical care division is not fully equipped and the referral system is not sufficiently completed.

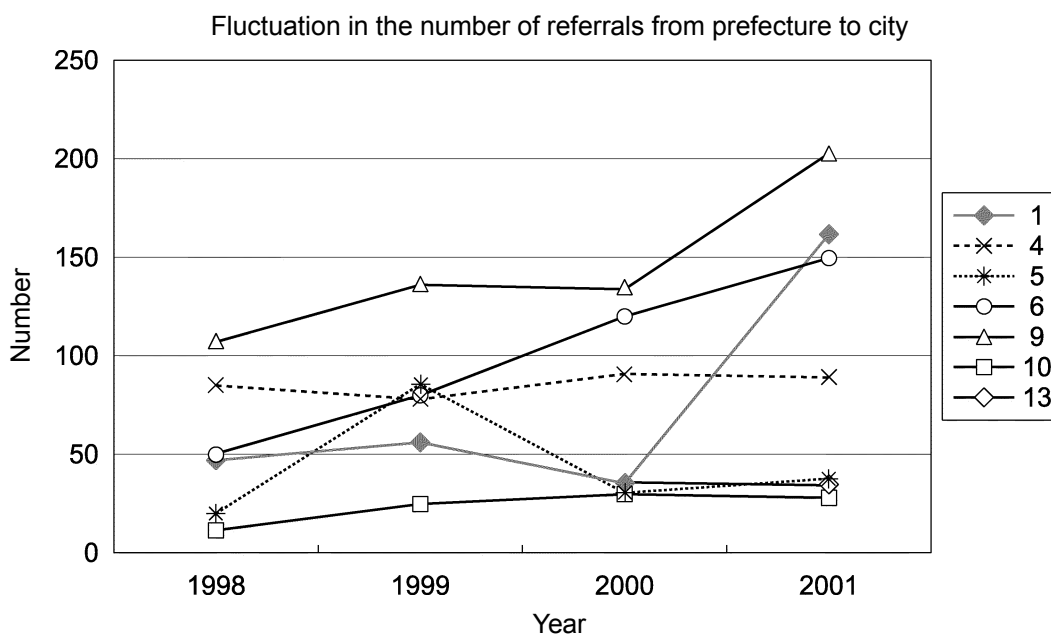


Figure: Number of referrals made by target prefectural health centers to city health centers

7) Referrals are appropriately carried out between general hospitals

Sustainability: not known

As described above, the referrals to general hospitals are parallel to the line for maternal-child centers. It is not possible to judge the disposition based only on the results of questionnaires, but as shown in the table below, it can be surmised that referrals from the prefectural health centers to general hospitals continue to be the more common case. Although the data is available only after the project completion, number of case of referrals to general hospitals is not decreasing. It may indicate that the improvement of equipment is not sufficient for establishment of a referral system. According to this study's results, specific external factors such as the lack of a transportation infrastructure might be more critical.

Table: Number of referral cases from the prefectural health centers selected as pilot sites to city level

Prefecture	Number of referrals to city health centers				Number of cases referred to general hospitals			
	1998	1999	2000	2001	1998	1999	2000	2001
1	n.d.	n.d.	n.d.	n.d.	350	323	398	408
2	28	25	26	31	38	34	39	35
3	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
4	47	56	52	63	1,070	1,168	1,540	1,609
5	5	14	22	30	12	23	30	56
6	n.d.	n.d.	n.d.	n.d.	70	80	90	90
7	n.d.	n.d.	n.d.	n.d.	81	72	64	49
8	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
9	260	325	512	686	n.d.	n.d.	n.d.	n.d.
10	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
11	30	28	27	26	13	10	8	8
12	n.d.	3	2	11	10	8	7	9
13	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
14	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.
15	26	21	18	8	16	25	40	56
Total	396	472	659	855	1,660	1,743	2,216	2,320

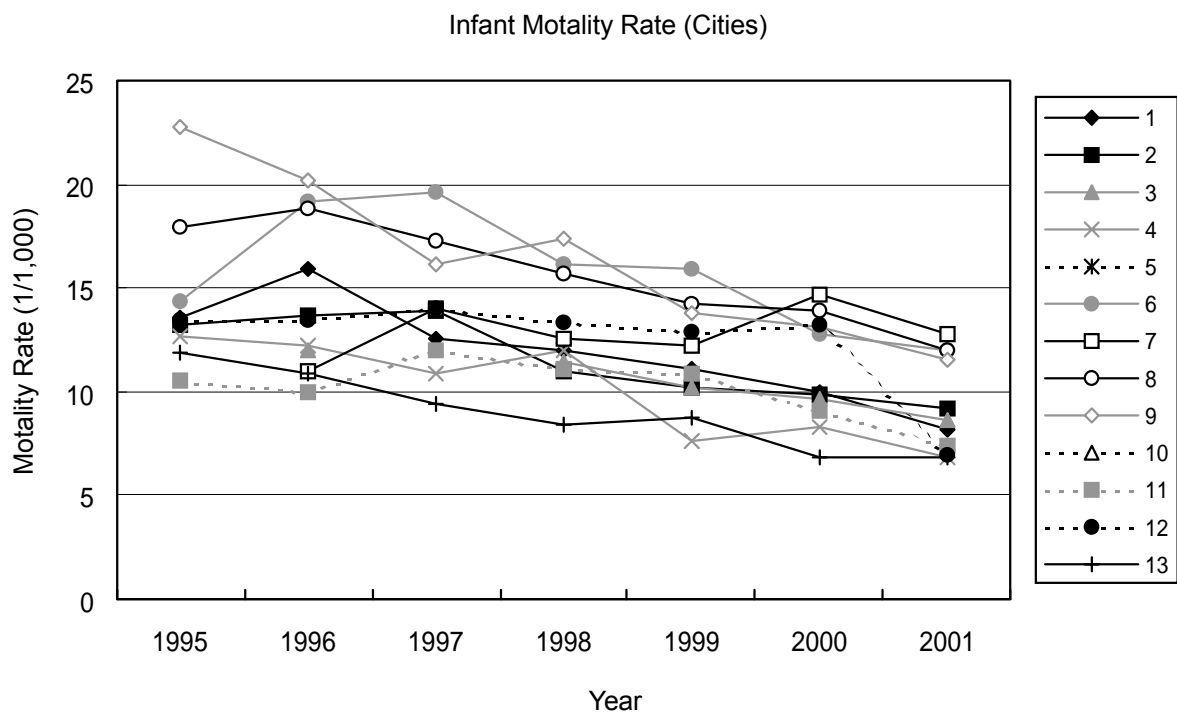
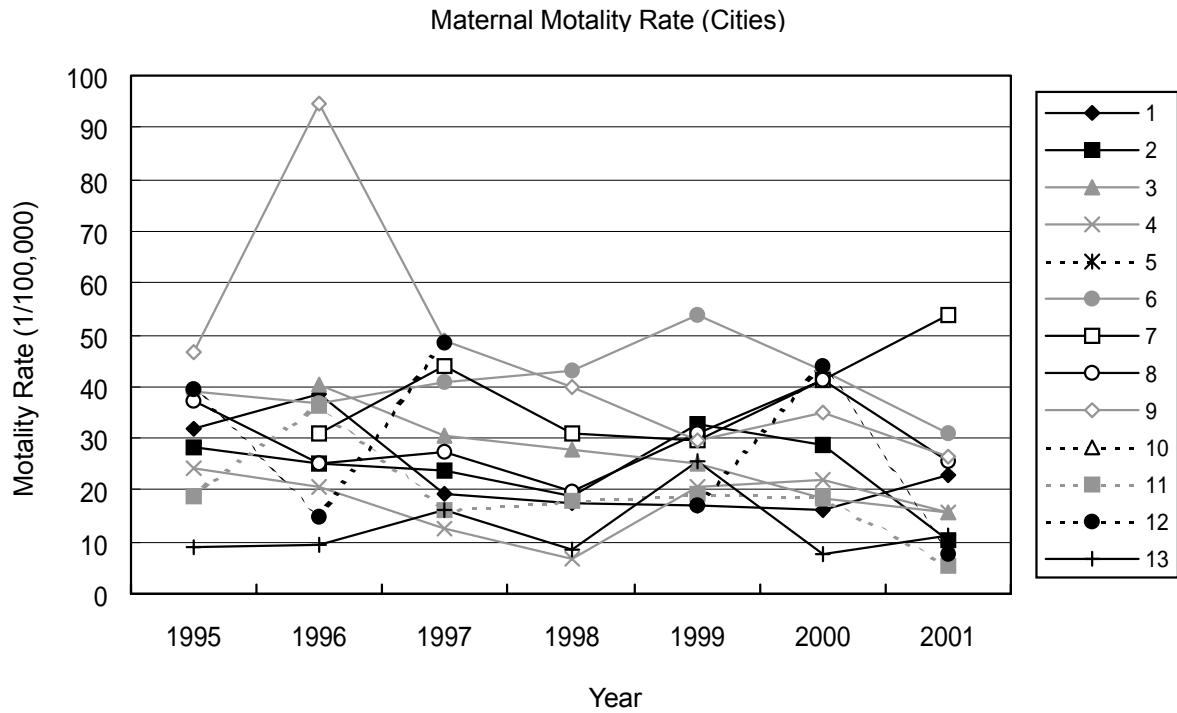
### 3-2 Impact of the Project

#### (1) Impacts Attained by Overall Goals

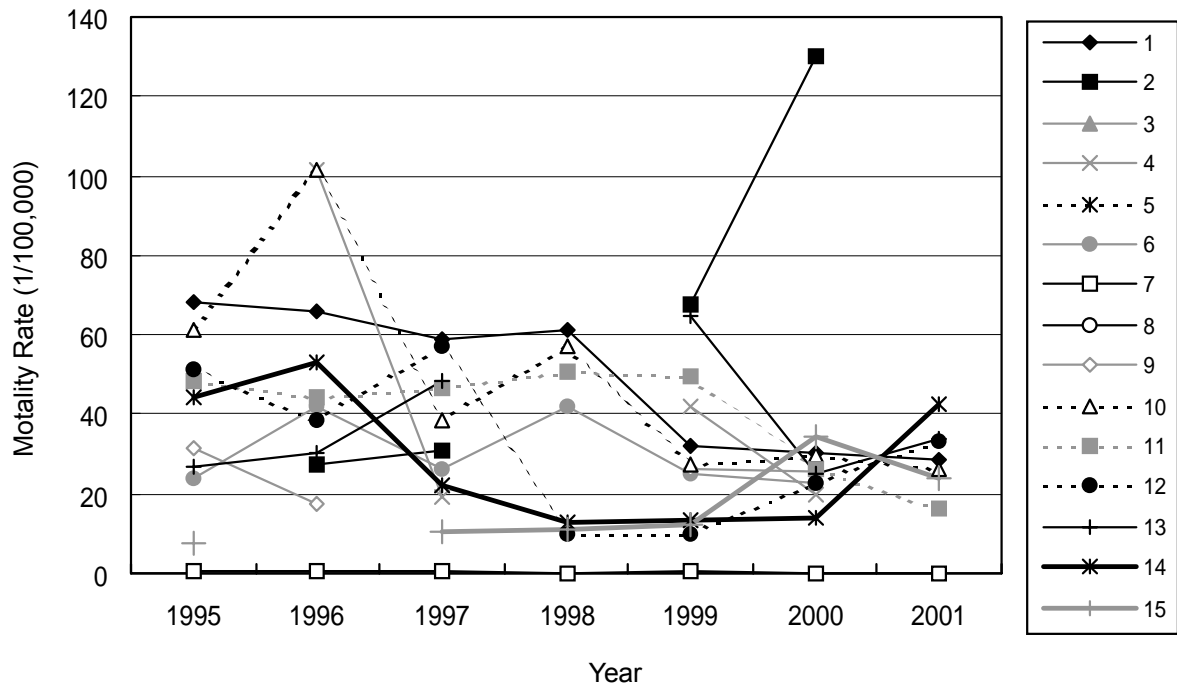
Impact	Yes/No	Current state
Non-target prefectural Maternal-child health centers in the province maintain facilities and personnel similar to that of the prefectural health centers selected as pilot sites.	-	It was not possible to obtain data from health centers not targeted in the Project for this questionnaire survey. However, information received up until now suggests that equipment maintenance at the prefectural health centers not targeted in this project is not well promoted.
Referrals between maternal-child health centers function appropriately in all regions of the province.	not known	Since it was not possible to obtain data from health centers not targeted in the Project for this questionnaire survey, it was not possible to ascertain referrals in the provincial area.
Referrals to general hospitals function appropriately in all regions of the province.	not known	Since it was not possible to obtain data from health centers not targeted in the Project for this questionnaire survey, it was not possible to ascertain referrals in the provincial area.
Maternal mortality rate falls 25 to 30% compared to 1990 by 2000.	-	It was not possible to obtain sufficient statistical data in this study. Base line data from 1990 was not obtained, so evaluation according to the indicators was not possible. Based on the data obtained, the maternal mortality rate, the infant mortality rate and the institutional delivery rate were all improved (refer to attached graph). However, one significant trend is that there has been no large change since before the equipment was provided in 1998 and after, so it is impossible to determine whether the improvement is due to the project.
Infant mortality rate falls by one-third of the current figure.	-	
By 2000 the child mortality rate for one to four year-olds drops 30% from 1990 level.	-	
By 2000 the perinatal mortality rate falls 20% from 1990 level.	not known	
By 2000 the institutional delivery rate reaches 100% in urban areas and over 95% in rural areas .	-	
Newborn tetanus is wiped out.	not known	
90% of pregnant women are covered by health and medical services by 2000.	-	



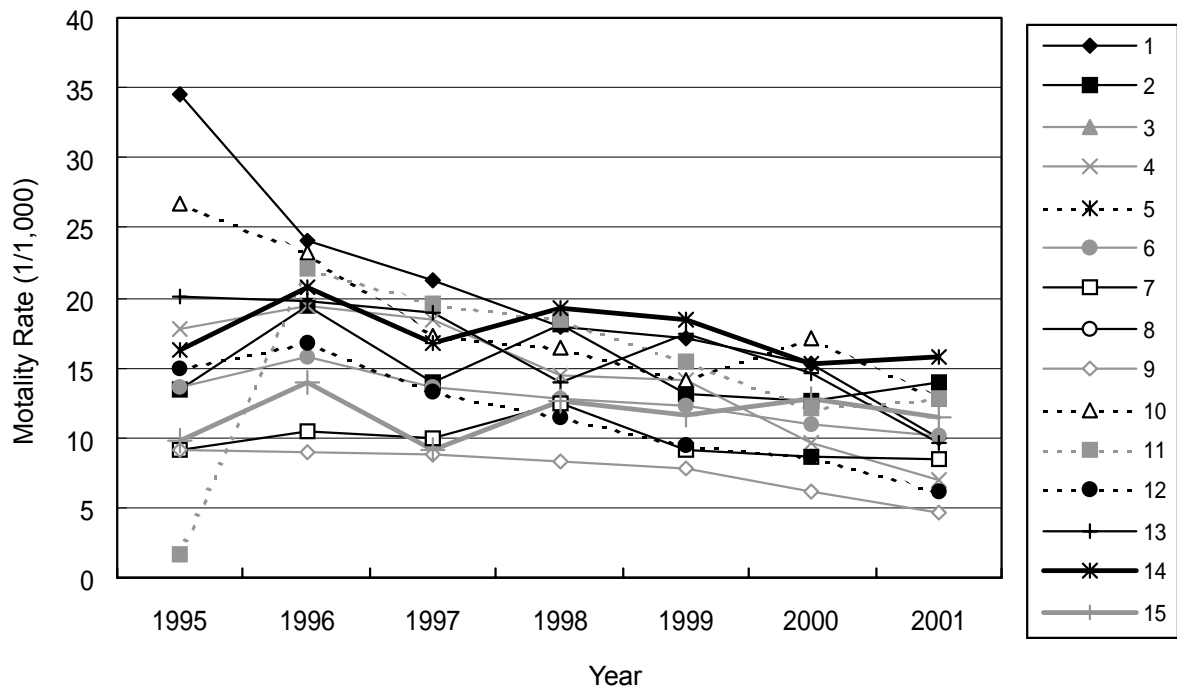
- Additional graphs: Fluctuations in health data in cities and prefectures targeted in the project

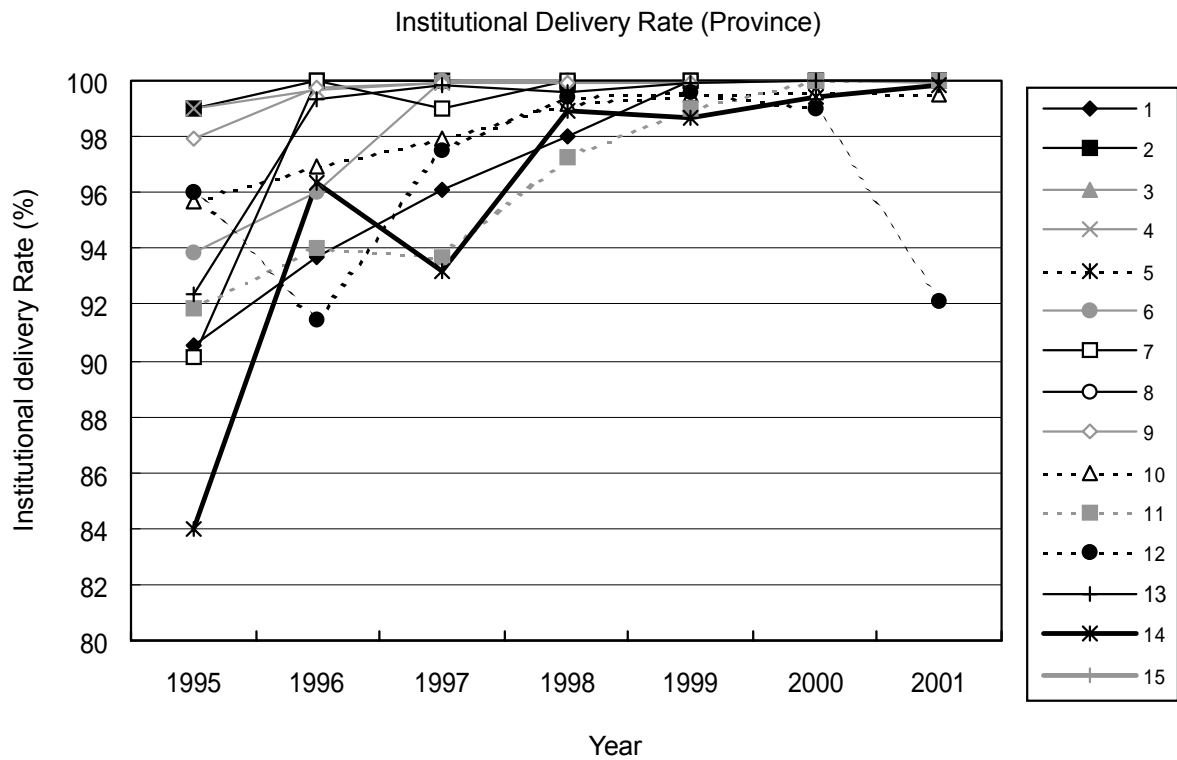


Maternal Mortality Rate (Province)



Infant Mortality Rate (Province)

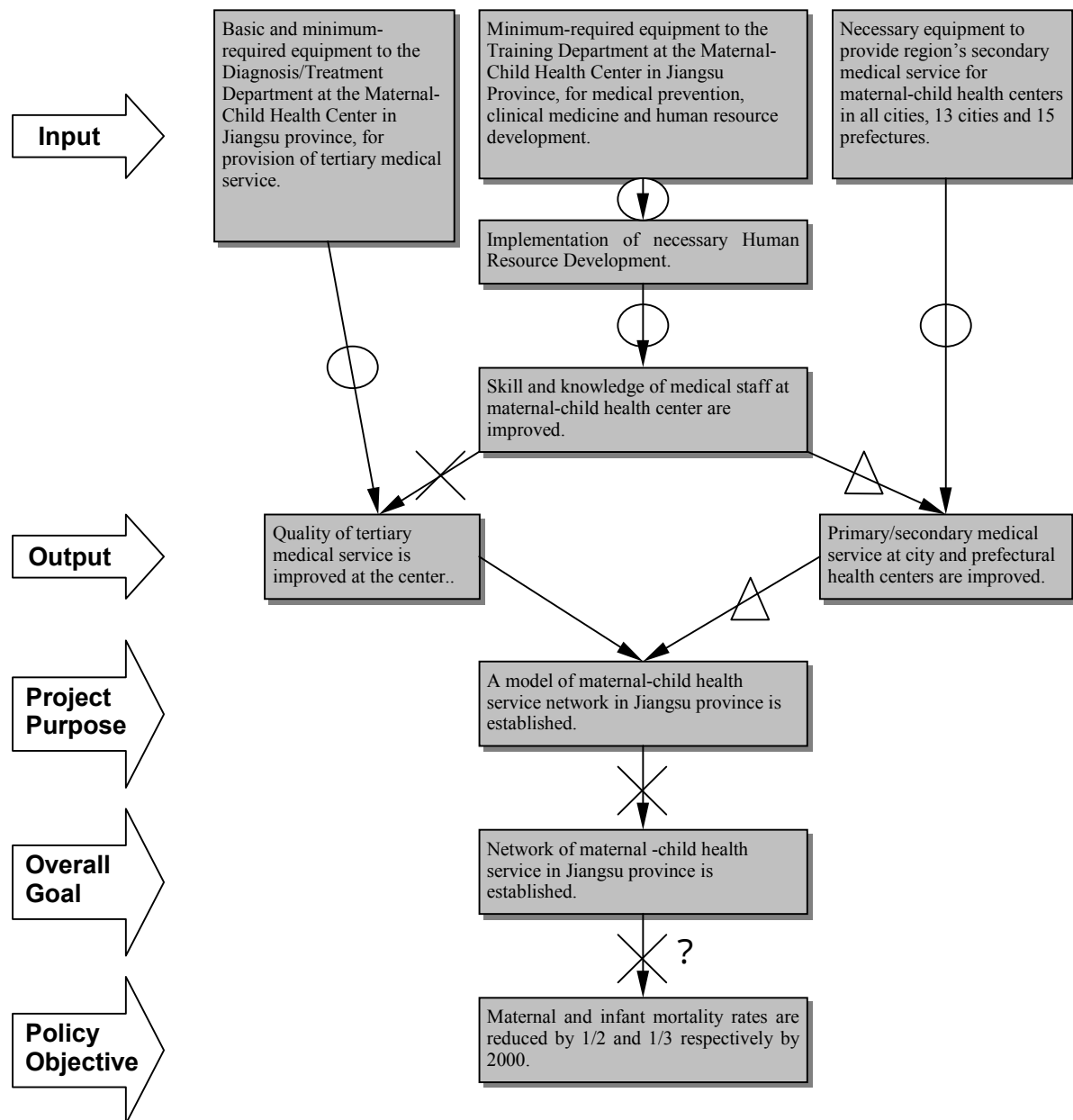




(2) Impact not Anticipated at Project Completion

Impact	Current state
Maternal-child health services below the prefectural level are improved.	Some prefectural health centers are using provided vehicles for medical visits to villages and towns. This example indicates that access to maternal-child health and medical services below the prefectural level may be improved in some areas.

### 3-3 Analysis of Factors of Impact and Sustainability



note: ○ : Significant effect observed, △ : Moderate effect observed; × : No Significant effect observed

#### (1) Promoting factors

Service at city and prefectural health centers have improved due to the input of equipment and technical guidance from the provincial maternal-child health center. The encouraging factor involved in this case is the fact that an existing structure below the city and prefectural level was prepared to some extent. Despite the provincial maternal-child health center's personnel difficulties, the center has been making efforts to fulfill its functions as the top institution by implementing training for the employees of the city and prefectural centers, and responding to the consultation request from prefectural centers regarding equipment management.

This can also be regarded as another promoting factor.

## (2) Inhibiting factors

The biggest inhibiting factor of the left-hand section on the figure above, e.g.: the amplification of the provincial maternal-child health center's functions, is the difficulties in recruiting doctors. The two factors involved here are, first, the necessity of incentives to encourage doctors with experience to move to a new hospital in general and, second, the fact that the provincial government is responsible for the provincial center's personnel expenses and these increase only as the number of patients increase. How these critical factors were considered at the time of project formulation is not clear, but they might not be considered thoroughly. This issue is closely connected to the provincial center's another difficulty, the slump in the number of patients. The results of the patient interviews conducted in this study, although the study scale is quite limited, indicated that the most important criteria for patients to choose a hospital were closeness and reliability (doctor's experience, facilities). The provincial center still has issues remaining around these two points (the center is located in a newly developed residential district away from the city, and many doctors are still young). Furthermore, in China's medical insurance system, companies and medical facilities make direct contract in payment of insurance fees. Consequently, patients receive services at the medical facility designated by the company the patient is affiliated. This is a large factor in gaining patients.

In any case, because of these issues, the project purpose of contribution to establishing the network of Jiangsu Provinces maternity and child health Services, having the provincial maternal-child health centers at the top, has not yet achieved. Furthermore, the equipment input made by the project is thought to be more effective in improving individual health centers and institutes than the referral system as a whole.

It is difficult to see an impact on the higher development issues such as the overall goal primarily due to the two external factors described below.

- Prefectures lack the financial ability to copy the model (procurement of standard equipment).
- It is difficult to see the impact quantitatively due to insufficient statistical data.

## **3-4 Issues, Problems**

The two issues of patient increases and securing doctors with experience go together as a set. It can be responded to in three ways: 1) effective public relation activities to raise the recognition of the center, 2) marketing to make contracts as the designated hospital of companies, and 3) part-time employment contracts

with doctors at other hospitals.

It is likely that the technical training regarding the use of the provided equipment is still insufficient at the prefectural level. It is also going to be difficult to bear the expenses for updating equipment in the future.

It is appropriate that in the referral system the line for general hospitals will continue to run parallel. Role and demarcation between the general hospital line should be clarified by region to region, based on geographic conditions and transportation infrastructure availability.

### **3-5 Conclusion**

- This project represents one type of prototype in the sense of contribution to establishing the network of Jiangsu Provinces maternity and child health services. However, the provincial maternal-child health center's most important function is not yet complete, and improvements at the prefectural health centers which were not a target in this project are not showing a good movement. Based on these evidences, the time when the model will be spread throughout the province in the near future is delayed.
- It is not easy to determine what contribution this project had on the decrease of maternal mortality rate and infant mortality rate at the provincial level. However, it would seem that the supply of equipment to the city and prefectural level led to increased numbers of patients. It would be appropriate to assume that health activities at the prefectural level had a preventative effect, and technical improvements at the city level had direct effect on the health of mother and child in the region. The provincial center only recently organized its statistical data, and some prefectural centers seems to need technical improvement in statistical data collection, therefore, reliability of current statistical data may not high enough. The extent of the impact (e.g. maternal mortality rate and infant mortality rate) must be ascertained again.
- The provincial maternal-child health center has great difficulties in recruiting its personnel. This study did not clarify the ways in which this issue was examined at the project planning. If information is obtained on this point, valuable lessons could be gained in forming equipment supply projects for new medical facilities in China.
- It is likely that financially weak prefectural health centers will have problems updating equipment in the future.

## 4. Recommendations and Lessons

### 4-1 Recommendations

- The provincial maternal-child health center must improve its advertising, raise its name recognition and increase the number of patients. By doing this, personnel can be recruited more smoothly.
- In prefectural governments with financial problems, the cities or province should help to enable smooth updating of equipment.

### 4-2 Lessons

#### Lessons relevant to the project formulation of similar projects in the future

- Since the provincial center in this project is a new facility, securing personnel and launching work were delayed. It should be noted that similar problems could occur when building a new medical facility.