

# TRIZ APPLICATION TO IMPROVE DIALYSIS CENTER SERVICE QUALITY

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**Abstract** - Medical service quality is associated with the patients' health and satisfaction. How to enhance medical service quality and reinforce the patients' satisfaction with medical service is the important issue in the modern medical industry. This study probes into hemodialysis (dialysis) patients' satisfaction with dialysis center service quality with a view toward improving the service quality using the TRIZ inventive principle. This study surveyed customers at one Hemodialysis clinic in the Xindian District of New Taipei City in Taiwan as subjects. The subject's satisfaction with service quality, the manner, friendliness, communication, comprehension, sympathy and precision of measurement were the higher dimensions. The inferior dimensions were physical aspect and waste of time. Using the TRIZ table and inventive principle, this study probes the improvement plans regarding environmental clinic, service, lighting and temperature, waiting time for service, medicine receiving time, environment, cleanness, comfort, convenience of parking and novelty of medical equipment to enhance dialysis center service quality.

**Keywords** - Hemodialysis, TRIZ, service quality, Contradiction Matrix

## I. INTRODUCTION

Changes in national life style and diet habits in Taiwan have resulted in many chronic diseases, such as high blood pressure, high blood sugar and high cholesterol: the three "highs". These chronic diseases have become the main risk factors for the top ten causes of death in Taiwan. Because of "the three highs", the risk for chronic kidney disease has increased. Based on statistics from the Ministry of Health and Welfare, 1 out of 10 adults aged above 20 in Taiwan suffer from chronic kidney disease (Liu, 2012). With the increase in living standards, the demand for medical service quality has continuously increased. The implementation of national health insurance has created more medical market options in Taiwan. When people select a medical service, the service quality is often the key factor. It is challenging for service providers to offer special attributes just to satisfy people's needs and demands (Chang, 2006). In recent years dialysis centers have developed into a prosperous medical service market business. Competition in this service has become severe. In order to keep old customers and attract new ones dialysis hospitals must strengthen patient satisfaction with the medical service. TRIZ was designed to solve innovative problems by improving one or more characteristics without affecting the other characteristics. Current TRIZ research has mostly solved inventive physics problems and construction techniques. Purpose of this study is to explore Hemodialysis patients' satisfaction with dialysis centers service quality and probe into dialysis center service quality improvement using inventive TRIZ principles. The goal is to allow patients to experience better service quality and strengthen the clinics' competitive advantages.

## II. LITERATURE REVIEW

### 1. TRIZ

TRIZ is the Russian abbreviation "Theoria Resheneyva Isobretatelskehuh Zadach" and it means Theory of Innovative

Problem Solving, TIPS) (Rantanen & Domb, 2008). Dew (2006) suggested that TRIZ is innovative thinking with high degree of structure. Problems tend to be effectively solved using TRIZ innovative development. TRIZ was first proposed by the Russian engineer and scientist Altshuller. The TRIZ Table of Contradictions is a 39 \* 39 matrix. The vertical axis lists the engineering characteristics that should be improved. It consists of 39 technical parameters. The horizontal axis lists the engineering characteristics that should not be deteriorated. It also consists of 39 technical parameters. The figures in central field are the 40 inventive principles. The Horizontal axis (degree) means the frequency of the corresponding technical characteristic inventive principles. When the degree is higher, it means the inventive principle is applied more frequently. In other words, solving the current problem using the said principle is more likely to be successful. Most engineers develop new ideas by brainstorming at the conceptual design stage. The disadvantage of brainstorming is that the engineers' knowledge is limited and it is not systematic. TRIZ can deal with these problems. In the past, TRIZ was applied mostly in technical fields to solve inventive problems. In recent years some scholars have introduced the TRIZ concept to non-technical fields, such as society and business management. TRIZ can replace traditional brainstorming which solves problems by elimination (Leon, 2003). Winkless & Mann (2001) applied the TRIZ inventive principle to Irish food and introduced new products using food packaging innovation. Zhang et al. (2003) adopted TRIZ to service design and tried to integrate the TRIZ theory to modern service development conceptual design. Ruchti & Livotov (2001) indicated that the business environment is severely competitive and TRIZ can replace past decision making based upon experience and

### 2. MEDICAL SERVICE QUALITY INDICATOR

The customers are patients. The medical personnel's competence, the medical service's precision and safety,

#### Publication History

Manuscript Received : 19 September 2015  
Manuscript Accepted : 2 October 2015  
Revision Received : 25 October 2015  
Manuscript Published : 31 October 2015

pleasant and comfortable environment, open communication between doctors and patients and harmonious atmosphere will influence patient satisfaction with Hemodialysis institutions. In research on the relationship between service quality, customer satisfaction and customer loyalty, Chang & Yu (2008) realized that customer satisfaction positively influences customer loyalty and they suggested reinforcing the service process to improve service attitude and increase professional knowledge and the capacity to strengthen customer satisfaction. Yeh et al. (2014) indicated that the correlation between medical quality and medical consumer response was positive. Yang et al. (2008) suggested that the dimensions of medical service quality include the following. (1) Reliability: doctors' service attitude, doctors patiently listen to my situation, medical personnel respect my privacy, doctors have excellent medical skills and morality, the nursing personnel's health education instructions are clear, medical personnel specifically inform the patient of the risk of various treatments, doctors carefully describe the situation and prognosis after the treatment, medical service personnel's professional capacity and experience. In diagnosis, medical examination personnel will check the identity of the patients; (2) Sympathy: service personnel can carefully explain the medical service process, workers attitude at the customer service desk is friendly, payment or registration personnel service attitude at the counter is positive, nursing personnel's service attitude, service attitude of personnel at the examination department, service attitude of pharmacy personnel, patients' have positive channels for complaints and medical personnel are considerate when dealing with complaints; (3) tangibility: cleanness of toilets, floor, aisles, consulting room and equipment, comfortable waiting area with sufficient seats, hospital spaces are bright, clear signage directions with smooth routes, complete and advanced medical facility, medical service personnel's service attitude, manners and appearance; (4) reaction: waiting time for medical service, waiting time for examination, waiting time to receive the medicine, time of doctor's diagnosis, waiting time for payment and registration and immediate solution for patients' complaints; (5) convenience: traffic, parking and convenience of reservation and registration. Patients' satisfaction is their subjective attitude after experiencing medical service quality. This is an extremely important indicator (Hu, 2004). Sharma & Narang (2011) indicated that the dimensions of medical service quality include (1) medical service: sufficient doctors, excellent diagnosis, satisfaction with prescription, quality of medicine, recovery/treatment, sufficient time for the patients and arrangement of payment; (2) interpersonal relationship, diagnosis and care: facility of reception, honesty, good clinical examination, visit/monitoring and sufficient medical facility; (3) facility: sufficient rooms, sufficient doctors for females, clean hospital building, workers with clean appearance and appropriate waste disposal; (4) hospital employees' behavior and medicine supply: sympathy and support, sufficient respect and offering of needed medicine; (5) finance and nursing of physical use: financial management, accessible medicine and approachability. According to Youssef (2011), dimensions of medical service quality include the following. (1) Manners: doctors and medical personnel's service attitude is friendly and enthusiastic. (2) friendliness: approachable; (3) communication: explanation by familiar language for the

patients and the patients can comprehend and understand; (4) comprehension: the patients realize their duty and rights; (5) sympathy: individual care and concern for the patients; (6) reliability: precise practice of promised service; (7) physical aspects: physical facility, equipment, personnel and appearance of promotion materials; (8) reaction: intention to help patients and offering of immediate service. According to literature review and result of expert interview, Cheng (2007) suggested that the subjects of medical service are patients and their satisfaction is one of the common indicators of service quality in hospitals. For Hemodialysis patients, medical personnel's professional capacity, safety and precision in the process of medical service, pleasant and comfortable environment, free communication between doctors and patients and harmonious relationship will influence patients' satisfaction with Hemodialysis institutions. Based on literature review, this study treats manners, friendliness, communication, comprehension, sympathy, reliability, physical aspects, reaction, waste of time, and precision of measurement, including 46 indicators, as the measures to evaluate satisfaction with service quality satisfaction

### **III. RESEARCH METHOD**

#### **1. Research Process**

The purpose of this study is to enhance Hemodialysis (dialysis) patients' satisfaction with Hemodialysis institution service quality using TRIZ to improve dialysis center service quality. Among the TRIZ methods the most commonly used tool is the Table of Contradictions reorganized by Altshuler after studying more than 400,000 patents and 40 inventive principles. This study will treat 40 inventive principles as the problem-solving tool. The study research process includes 6 steps: Step 1: define the research scope and treat service quality in medical industry as the subject. Step 2: match the attributes reorganized in the literature review with the TRIZ technical attributes. Step 3: collect and analyze data and discuss the matching results. Step 4: construct a Contradiction Matrix suitable for medical service quality. Step 5: using case analysis, probe into inventive principle applications in the matrix. Step 6: propose a plan to improve medical service quality. This questionnaire includes two parts. Part 1: basic information: gender, age, educational level, occupation and time of Hemodialysis; Part 2: investigation in satisfaction with service quality satisfaction using Likert 5-point scale, including manners, friendliness, communication, comprehension, sympathy, reliability, physical aspects, reaction, waste of time and precision of measurement. This study treats one Hemodialysis clinic in Xindian District of New Taipei City as the subject. From March to April 2014 this study collected data by distributing questionnaires. The subjects have regularly received weekly Hemodialysis outpatient service at the Hemodialysis center. Using one-to-one explanation, the researcher suggested the method to fill in questionnaires. For the illiterate the researcher filled in the questionnaires by inquiry. There are 115 valid retrieved questionnaires. Nunnally (1978) suggested that in an exploratory study, reliability above 0.7 is acceptable. In this study, reliability of the variables is above 0.7 and thus reliability is good. The reliability of variables in this study is shown in Table 1. This study adopted analysis of SPSS to analyze data. The data analysis method was analysis of variance (ANOVA).

## **2. MEASUREMENT OF SATISFACTION WITH SERVICE QUALITY**

Upon literature review (Yang et al., 2008; Youssef, 2011; Sharma & Narang, 2011; Yeh, et al., 2014; Wongrukmit & Thawesaengskulthai, 2014; Altuntas et al., 2012) and business of dialysis clinic, this paper generalizes the items to measure satisfaction with service quality as follows:

- (1) Manners: (a) medical personnel's service attitude is respectful; (b) medical personnel's service attitude is enthusiastic and well-mannered; (c) medical personnel treat me with politeness and respect; (d) medical personnel respond to patients' questions with politeness.
- (2) Friendliness: (a) clinical medical procedure is simple; (b) the clinic provides time-saving and convenient diagnosis and consultation; (c) the clinic provides patients with the appropriate treatment; (d) medical appointment matches the customers' needs.
- (3) Communication: (a) medical personnel can clearly explain the test results and provide suggestions for improvement; (b) doctors can explain my condition using language that I can understand; (c) medical personnel can explain the condition before and after Hemodialysis; (d) medical personnel can communicate with the patients to avoid cognitive differences; (e) medical personnel can respond to patients' questions using familiar language.
- (4) Comprehension: (a) I can understand the doctors' diagnosis process and explanation; (b) my complaints can be comprehended and treated; (c) medical personnel can introduce the treatment using familiar language; (d) medical personnel can clearly understand my description.
- (5) Sympathy: (a) medical personnel allow me to receive Hemodialysis treatment with a sense of security; (b) consultation time matches my needs; (c) medical personnel listen to questions with patience; (d) medical personnel understand Hemodialysis discomfort and try to solve the problem; (e) medical personnel care about and understand my treatment needs.
- (6) Reliability: (a) doctors can properly adjust the medicine according to condition of illness; (b) medical personnel can clearly explain the test results and treatment; (c) doctors have excellent capacity for diagnosis and medical treatment; (d) medical personnel have sufficient professional knowledge; (e) medical personnel have excellent medical and nursing techniques
- (7) Physical aspects: (a) dialysis room is clean and comfortable; (b) lighting and temperature of dialysis room will be properly adjusted according to needs; (c) dialysis room is spatial; (d) arrangement of space in the clinic is good; (e) the clinic is clean and comfortable; (f) medical equipment in the clinic is new.
- (8) Reaction: (a) my complaints can be appropriately and immediately treated; (b) when I am in need, I can have the assistance from medical personnel at any time; (c) in medical process, when I feel uncomfortable, I can be treated immediately and properly; (d) with the call of emergency, medical personnel have immediate reaction and treatment.
- (9) Waste of time: (a) clinic parking is convenient; (b) consultation service appointment times at the clinic are appropriate; (c) patients can receive the medicine rapidly; (d) clinic can lower the waiting time for consultation

- (10) Precision of measurement: (a) breakdown rate of medical equipment is low; (b) medical personnel can precisely measure different figures; (c) instrument of measurement adopted in this clinic is highly precise; (d) the clinic has precise diagnosis.

Scoring is based on Likert 5-point scale and responses selected by subjects. "Totally agree" refers to 5, "agree" is 4, "normal" is 3, "disagree" is 2 and "totally disagree" is 1.

## **IV. RESEARCH RESULTS**

### **1. PATIENTS' SATISFACTION WITH SERVICE QUALITY IN DIALYSIS CENTER**

This study measured satisfaction with service quality using manners, friendliness, communication, comprehension, sympathy, reliability, physical aspects, reaction, waste of time and precision of measurement, totaling 46 indicators. It adopted t test as statistical method. Research findings are shown in Table 2. Based on figures, as to satisfaction with service quality, satisfaction with manners, friendliness, communication, comprehension, sympathy and precision of measurement is higher. The inferior dimensions are physical aspects and waste of time. It is suggested that dialysis center can improve these two dimensions. By variance analysis, this study explored whether basic information affects satisfaction with service quality in the clinic. Satisfaction with service quality will not be different because of gender, age, educational level and occupation. Satisfaction with service quality (friendliness, communication, comprehension, sympathy and precision of measurement) will be different since patients' Hemodialysis time is different. Hemodialysis outpatient service patients who are less experienced are less satisfied with service quality (friendliness, communication, comprehension, sympathy and precision of measurement). Therefore, it is necessary to enhance service quality (friendliness, communication, comprehension, sympathy and precision of measurement) for them in order to reinforce satisfaction.

### **2. MEDICAL QUALITY IMPROVEMENT PLAN**

According to statistical analysis figures, inferior service quality refers to physical dimensions and waste of time. The figures in the cross grids are the TRIZ contradiction matrix. The corresponding table presents the inventive principle codes, as shown in Table 3. Based on the previous parameters for improvement and deterioration and inventive principles analysis, we propose the improvement plans shown in Table 4.

## **V. CONCLUSION**

This study attempted to find if basic information will influence patient satisfaction with the clinic service quality. Gender, age or educational level did not influence patient satisfaction with service quality. Patient time in Hemodialysis has the greatest impact on patient satisfaction with clinic service quality. Outpatient service patients who are less experienced with Hemodialysis are less satisfied with clinic service quality (friendliness, communication, comprehension, sympathy and precision of measurement). The dialysis clinic should enhance service quality (friendliness, communication, comprehension, sympathy and precision of measurement) for them to strengthen patient satisfaction with service quality.

Patient satisfaction with manners, friendliness, communication, comprehension, sympathy and precision of measurement were the superior dimensions. The inferior dimensions were the physical aspects and waste of time. The dialysis center should improve these two constructs. In order to improve them, using the TRIZ Table of Contradictions and inventive principles, we propose an improvement plan as follows:

- (1) Dialysis room spatial arrangement: (a) Re-arrange the treatment area, materials area, aisles, location of objects to change the interior space to produce better routes through the area; (b) control the process to ensure effective use of space; (c) equipment and appliances should be placed onto carts to save time and space and enhance current equipment use.
- (2) Service arrangement: (a) Using different colors, enhance the workers' identification. Orange is for diabetic patients; blue is for patients who require Ferric chloride injections and yellow is for patients in the infection area. These colors should be indicated in the illness case pages. (b) Required objects should be placed onto carts in advance to save time; (c) Dialysis outpatient service patients with different sessions and traffic routes are arranged in the same sessions. When there is medical problem the related doctors should provide immediate consultation service in the clinic to avoid the patients' coming back and forth and waiting; (d) Patients' Hemodialysis sessions should be arranged to increase the bed use rate. Patients' Hemodialysis time at different sessions should be arranged to increase the bed use rate. We can arrange Hemodialysis patients with 4.5 and 3.5 hour sessions in the same session to avoid waiting time and increase the equipment use rate.
- (3) Dialysis room lighting and temperature adjustment: Indoor lighting should be indirect to avoid eye strain. Working area and aisles lighting should be designed differently.
- (4) Reduction of waiting time before consultation: (a) regular meetings should be scheduled to discuss patient situations to familiarize staff with their medical service procedures; (b) Enhance the dispatching of cars and help patients reserve return visits; (c) when waiting time is more than 5 minutes, contact the driver regarding the arrival time at the hospital to confirm the patients' wait time and avoid uncertainty. Adopt an online consultation system and web-conferencing for integrated outpatient service; (d) Use Skype accounts for pharmacy prescription services for the physically disabled or aged patients to improve medical services.
- (5) Patients can receive medicine immediately: (a) we inform the patients of the next medicine receiving time and process and are prepared for them; (b) Dialysis registration is separated from outpatient service registration counter. Cooperate with the neighborhood pharmacy and the pharmacist distributes the medicine to dialysis patients.
- (6) Spatial, clean and comfortable clinic environment: (a) process is controlled to ensure effective use of space; (b) facilities and appliances are placed onto

carts to save space and time; (c) Introduce the 5S project at the treatment area.

- (7) Clinic parking: Sign a contract with the building to increase 3D parking for patients with needs.
- (8) Novelty of medical equipment in clinic: Eliminate older machines and purchase new ones and enhance effective equipment use rate.

The previous suggestions are provided to help improve medical institutions regarding process, facility, software and hardware in dealing with patients' needs to enhance their satisfaction with service quality to accomplish sustainable operations.

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**Table 1 Cronbach's  $\alpha$  coefficient for all variables**

Dimensions of questionnaire		Cronbach's $\alpha$
Service quality	manners	0.966
	friendliness	0.852
	communication	0.869
	comprehension	0.892
	sympathy	0.857
	reliability	0.806
	physical aspect	0.800
	reaction	0.822
	waste of time	0.821
	precision of measurement	0.909

**Table 2 Satisfaction with service quality**

Dimensions	Satisfaction			
	Mean	Standard deviation	T-value	p-value
1.Manners				
(1) Medical personnel's service attitude is respectful	4.147	0.356	4.447	0.000*
(2) Medical personnel's service attitude is enthusiastic and well-mannered	4.156	0.364	4.599	0.000*
(3) Medical personnel treat me with politeness and respect	4.173	0.380	4.899	0.000*
(4) Medical personnel respond to patients' questions with politeness	4.182	0.388	5.047	0.000*
2. Friendliness				
(1) Medical procedure is simple in the clinic	4.200	0.481	4.457	0.000*
(2) The clinic provides time-saving and convenient diagnosis and consultation	4.200	0.462	4.636	0.000*
(3)The clinic provides the patients with appropriate treatment	4.121	0.498	2.620	0.010*
(4) Arrangement of medical time matches the customers' needs.	4.191	0.528	3.885	0.000*
3. Communication				
(1) Medical personnel can clearly explain the result of test and provide suggestion of improvement	4.217	0.526	4.430	0.000*
(2) Doctors can explain my condition by the language which I can understand	4.217	0.491	4.741	0.000*
(3) Medical personnel can explain the condition before and after Hemodialysis	4.226	0.514	4.717	0.000*
(4) Medical personnel can communicate with the patients to avoid cognitive difference	4.243	0.523	4.992	0.000*
(5) Medical personnel can respond to patients' questions by familiar language.	4.226	0.496	4.882	0.000*
4.Comprehension				
(1) I can understand doctors' diagnosis process and explanation	4.269	0.535	5.402	0.000*
(2) My complaints can be comprehended and treated	4.260	0.563	4.966	0.000*
(3) Medical personnel can introduce the treatment by my familiar language	4.243	0.505	5.161	0.000*
(4) Medical personnel can clearly understand my description.	4.269	0.445	6.486	0.000*
5. Sympathy				
(1) Medical personnel allow me to receive Hemodialysis treatment with sense of security	4.191	0.416	4.924	0.000*
(2) Consultation time matches my needs	4.200	0.481	4.457	0.000*
(3) Medical personnel listen to questions with patience	4.200	0.481	4.457	0.000*
(4) Medical personnel understand the discomfort of Hemodialysis and try to solve the problem	4.182	0.505	3.872	0.000*
(5) Medical personnel care about and understand my needs of treatment.	4.165	0.494	3.584	0.000*

**Table 2 Satisfaction with service quality (continued)**

Satisfaction				
Dimensions	Mean	Standard deviation	T-value	p-value
<b>6. Reliability</b>				
(1) Doctors can properly adjust the medicine according to condition of illness	4.043	0.536	0.869	0.386
(2) Medical personnel can clearly explain the test result and treatment	4.069	0.573	1.302	0.196
(3) Doctors have excellent capacity of diagnosis and medical treatment	4.078	0.548	1.530	0.129
(4) Medical personnel have sufficient professional knowledge	4.060	0.566	1.152	0.252
(5) Medical personnel have excellent medical and nursing techniques	3.961	0.727	-1.154	0.251
<b>7. Physical aspect</b>				
(1) Dialysis room is clean and comfortable	3.643	0.595	-6.424	0.000*
(2) Lighting and temperature of dialysis room will be properly adjusted according to needs	3.313	0.667	-11.043	0.000*
(3) Dialysis room is spatial	2.669	0.885	-16.107	0.000*
(4) Arrangement of space in the clinic is good	2.652	0.816	-17.692	0.000*
(5) The clinic is clean and comfortable	3.252	0.723	-11.083	0.000*
(6) Medical equipment in the clinic is new.	3.817	0.570	-3.430	0.001*
<b>8. Reaction</b>				
(1) My complaints can be appropriately and immediately treated	3.961	0.643	-1.236	0.495
(2) When I am in need, I can have the assistance from medical personnel at any time	3.930	0.433	-1.720	0.088
(3) In medical process, when I feel uncomfortable, I can be treated immediately and properly	3.956	0.568	-0.821	0.413
(4) With the call of emergency, medical personnel have immediate reaction and treatment	3.973	0.520	-0.537	0.592
<b>9. Waste of time</b>				
(1) Parking of the clinic is convenient	3.878	0.498	-2.620	0.010*
(2) The clinic provides convenient service of shuttle bus	3.887	0.473	-2.562	0.012*
(3) Time arrangement of consultation service in the clinic is appropriate	3.600	0.735	-5.835	0.000*
(4) Patients can receive the medicine rapidly	3.260	0.927	-8.541	0.000*
(5) Clinic can lower the waiting time for consultation	3.260	0.927	-8.541	0.000*
<b>10. Precision of measurement</b>				
(1) Breakdown rate of medical equipment is low	4.104	0.307	3.644	0.000*
(2) Medical personnel can precisely measure different figures	4.182	0.388	5.047	0.000*
(3) Instrument of measurement adopted in this clinic is highly precise	4.287	0.454	6.773	0.000*
(4) The clinic has precise diagnosis	4.287	0.454	6.773	0.000*

Note:  $H_0: \mu = 4$ ,  $H_1: \mu \neq 4$ ; \* $p < 0.05$

**Table 3 Contradiction matrix of medical service quality**

Parameter of improvement	Parameter of deterioration	Inventive principles
physical aspect (12)	waste of time (25)	14, 10, 34, 17
waste of time (25)	physical aspect (12)	04, 10, 34, 17

**Table 4 Improvement plans of medical service quality**

Inventive numbers	Inventive principles	Improvement items	Improvement plans
04	Asymmetry	<ol style="list-style-type: none"> <li>1. Spatial arrangement of dialysis room</li> <li>2. Service Arrangement of clinic service</li> <li>3. Lighting of dialysis room is properly adjusted according to needs</li> </ol>	<ol style="list-style-type: none"> <li>1. We re-plan treatment area, material area, aisle, location of objects to change the interior space and lead to better routes.</li> <li>2. By different colors, we enhance the workers' identification. Orange is diabetic patients; blue is patients who have used Ferric chloride injection and yellow is the patients in infection area. They are indicated in the pages of illness cases.</li> <li>3. Indoor lighting becomes indirect to avoid the strong lighting. Lighting of working area and aisles is designed differently.</li> </ol>
10	Priorities	<ol style="list-style-type: none"> <li>1.The clinic lower the waiting time for consultation</li> <li>2. Patients can receive the medicine rapidly</li> <li>3.Time arrangement of consultation service in the clinic is appropriate</li> </ol>	<ol style="list-style-type: none"> <li>1.Regular meetings to discuss the patients' situations in order to be familiar with their medical service procedure. We enhance the dispatching of cars and help patients reserve the return time.</li> <li>2.We inform the patients of the next medicine receiving time and process and are prepared for them.</li> <li>3. The items needed are prepared in advance on the cart to save time.</li> </ol>
14	Smoothness	<ol style="list-style-type: none"> <li>1. Reduction of waiting time for consultation</li> <li>2. time arrangement of consultation service in the clinic is appropriate</li> <li>3. Dialysis room is spatial</li> <li>4. The clinic is clean and comfortable</li> </ol>	<ol style="list-style-type: none"> <li>1. When waiting time is more than 5 minutes, we actively contact with the driver regarding the time to arrive at the hospital in order to confirm the patients' waiting time and avoid uncertainty. Outpatient service patients can adopt online consultation system and web-conference as integrated outpatient service.</li> <li>2.Dialysis outpatient service patients with different sessions and traffic routes are arranged in the same sessions. When there is medical problem, the related doctors provide consultation service in the clinic to avoid the patients' visit back and forth and waiting.</li> <li>3. Process is controlled to make sure that the process is used effectively.</li> <li>4. 5S project is introduced in treatment area.</li> </ol>
17	Change of dimension	<ol style="list-style-type: none"> <li>1. Patients can receive medicine rapidly</li> <li>2. The clinic can reduce the consultation time</li> <li>3. Parking of the clinic is convenient</li> </ol>	<ol style="list-style-type: none"> <li>1. Dialysis registration is separated from outpatient service registration counter. We cooperate with the pharmacy in the neighborhood and the pharmacist distributes the medicine to dialysis patients.</li> <li>2.By connection with Skype accounts, the pharmacy transmits the prescription and the reservation for physically disabled or aged patients is the prior to improve medical service.</li> <li>3.We sign the contract with the building to increase 3D parking for the patients with needs.</li> </ol>
34	Recycling	<ol style="list-style-type: none"> <li>1. Dialysis room spatial</li> <li>2. Service arrangement is smooth</li> <li>3. Medical equipment in the clinic is new</li> </ol>	<ol style="list-style-type: none"> <li>1.We place the equipment and appliance on the carts to save time and space and enhance effective use of current equipment.</li> <li>2. The patients' Hemodialysis time at different sessions are arranged to increase use rate of beds. We can arrange the patients of Hemodialysis with 4.5 and 3.5 hours in the same sessions to avoid the waiting time and increase use rate of equipment.</li> <li>3. We properly eliminate old machines and purchase new ones to enhance effective use rate of current equipment.</li> </ol>