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Proactive Management Approach in Prevention of Kidney Transplantation

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1. Introduction

Chronic kidney disease (CKD) is a serious health problem that increases both in terms of prevalence and importance all around the world. However, while the number of patients is steadily increasing, not enough organs are available for transplantation and the gap between the patients who need transplantation and the number of existing donors has widened considerably. In order to address the problem of the increased demand for kidneys, we need to review the real issues underlying the existing situation. Is the problem related to the insufficient number of donors? Or are there too many diseased kidneys? If we can accurately define the problem referred to as the "organ shortage", a major step towards the solution can be achieved. The goal of this chapter is to discuss an applicable strategy that aims to reduce or prevent kidney transplantations using a proactive management approach that includes medical as well as managerial strategies.

2. Proactive management approach

Proactive management is based on preventing a mistake before it happens being one step ahead of that mistake. The concept of proactive means taking action before an event happens; and proactive management is an approach based on designing the desired future and the managerial environment in the said future. Proactive management approach is frequently used in management field to change the course of existing conditions deliberately or create new conditions. The essence in this approach which requires developing new paths and strategies to shape the future for organisations and services is long term gains. (Charles, 2008; Kocel, 2005).

Above all, proactive management represents a philosophy, understanding and a belief. This philosophy and belief do not follow after the events but instead shape events by predicting and having an impact on the future. Proactive management or mainly proactive planning approach is to review and explore strategies that enable us to foresee future events (Teixidor, 2006). The beginning of proactive management, i.e. planning is to understand that we have to to look into the future. Planning stage requires to understand that there are opportunities to be used or certain events which may interfere with the structure are about to happen. Planning is the main tool of proactive behaviour. Especially to achieve such an

understanding in long term strategic planning, it should be clearly defined as to with what goals the organisation is established, what the organisation plans to do and where the organisation wants to see itself (Kocel, 2005).

Whereas reactive management is defined as a working and management style to look for solutions for the problems already encountered. Reactive management approach means to react to the conditions already encountered, to search to find what needs to be done to adapt to the conditions encountered. Most of the reactive approaches or reactive actions are based on the practices of reactive planning algorithm after the problem happens. The major disadvantage of these processes is that they also include the flexibility which may change the processes assuring the quality of the services. Reactive approach is generally used in situations where the degree of uncertainty is high or there is no information regarding the uncertainty (Teixidor, 2006)

Proactive approach is beyond being dull and over analytical. It is a starting point for change and creativeness. As a result of reactive approach managers become too busy running from crisis to crisis and give a wrong impression that they are constantly working. In reality this situation should be seen as an indication that the management has lost the control. Proactive management includes tools, methods and applications which enable the replacement of reactive managerial habits with a dynamic management style that can actually respond to needs. Proactive approach is related with critical work behaviours for success; it is to develop assertive goals, to frequently review these goals, to develop open policies, to focus on preventing problems, to inquire why work is done in a certain way instead of defending blindly the way in that the work is done (Procen, 2010).

Proactive approach is always more preferred than reactive approach. In proactive approach, it is necessary to monitor the conditions closely to foresee possible developments and to make changes within the organisation. Proactive managerial approach enables organisations to make necessary arrangements so that they could be the least affected by the conditions that they may face in the future. In that sense, developing an early warning system for individuals and organisations is an effective method (Toland, 2007). Early warning system increases the awareness of individuals and at the same time creates a database contributing to the decision making process of organisations while defining paths and strategies.

Although this approach corresponds to preventive medicine approach, this is also a managerial approach which includes calculating risks and challenges in advance, making predictions and developing strategies accordingly. Due to the above qualities, it is used in certain fields of healthcare services such as monitoring and preventing some chronic diseases such as diabetics, cardiac failures and obesity (MacStravic, 2008; Daleiden-Burns & Stiles, 2007). This approach has started to be used also in activating databases in healthcare services and reducing health expenditures of social security organisations (Overhage, 2008; Richardson, 1997).

3. Kidney transplantation and proactive management approach

3.1 Definition

Chronic kidney disease (CKD) is a nephrological syndrome characterised by chronic, progressive and irreversible nephron loss resulting from multiple etiologies. Chronic kidney disease is one of the most important public health issues in Turkey and in the world. Nowadays, the number of people suffering from chronic kidney disease is increasing (Levey, 2007; Obrador & Pereira, 2010).

3.2 Importance

As of the end of 2008, there were 60,592 patients with chronic kidney disease in Turkey. Of these patients 13,346 were added to the total figure within the same year (TSN, 2009). These patients need dialysis treatment or kidney transplantation. 54,700 chronic kidney disease patients were on dialysis treatment and at the same time hoping for kidney transplantation. According to the data of the Ministry of Health, only 2502 of these patients received kidney transplants in 2010. Every year, 110 of 1000 End Stage Renal Disease (ESRD) patients lose their lives waiting for kidney transplantation; and 4506 patients lost their lives in 2008 (TSN, 2009; MHT, 2011). As of the end of 2007, there were 527,283 ESRD patients in the USA. Of these patients 111,000 were included in the ESRD programme in 2007 (Obrador & Pereira, 2010). According to the yearly report of the U.S. Organ Procurement and Transplantation Network and the Scientific Registry of Transplant Recipients, in 2007 16,120 patients and in 2008 16,067 patients of the above received kidney transplantation. In the USA 87,812 ESRD patients lost their lives in 2007. One, two and five year life expectancy of dialysis patients is 81, 65 and 34 percent respectively (Obrador & Pereira, 2010).

CKD is a condition which in addition to causing loss of lives, creates serious social problems for patients especially for paediatric patients, patients' families and the society as with many chronic diseases (Richardson, 1997; Şirin et al., 1995). For adult patients, in addition to economical, social and psychological problems, an important loss of working time is assigned. Children with CKD have growth failure, and their education is hampered and severe psychological problems emerge in their families (Karakavak, 2006; Falkenstein, 2004).

CKD does not only cause loss of lives and social losses but also with a yearly expenditure of USD 25,000 per patient, and although relatively less, a yearly expenditure of USD 10,000 for patients who have undergone kidney transplantation, it also causes major economic losses (Kapuagası, 2010). In the USA the total of the costs of ESRD treatment programmes is estimated to be USD 28 billion based on the number of patients in 2010 (Obrador & Pereira, 2010). Such economic consequences of ESRD cause problems in appropriation and use of the resources allocated for healthcare service (El Nahas & Bello, 2005).

3.3 Etiology and reasons

There are certain risk factors leading to the occurrence of CKD. Generally, history of diabetes mellitus, cardiovascular disease, hypertension, hyperlipidemia, obesity, metabolic syndrome, smoking, HIV or hepatitis C virus infection, and malignancy are among risk factors for CKD. In addition to those, family history of CKD, advanced age and treatment with potentially nephrotoxic drugs are other risk factors. Among these risk factors diabetes mellitus, high blood pressure and cardiovascular diseases are the ones which require the most attention to prevent the occurrence of CKD (Obrador & Pereira, 2010).

In the report prepared by The Turkish Society of Nephrology (TSN, 2009) in Turkey, in haemodialysis patients, diabetes mellitus and high blood pressure ranked in the top two among the risk factors of CKD. In addition to these, glomerulonephritis, polycystic kidney diseases, pyelonephritis, amyloidosis and other diseases are also among the risk factors. The frequency and ratios of these risk factors are shown in Table 1.

When the etiology of chronic renal failure in children is examined, the chief ethiologies are found to be vesico ureteral reflux (VUR) and recurrent urinary tract infection (25.9%), then primary glomerulonephritis (18.4%), other known causes (15.1%) and congenital urologic anomalies (excluding VUR) (13.4%) (TSN, 2009). Urinary tract infection (UTI) known to be the most common cause of CKD is usually a preventable disease coming second after respiratory

tract infections among childhood infections. According to the studies, UTI is currently an important etiology of CKD even in the developed countries (Warady & Chadha, 2007). Except some congenital diseases, early diagnosis and suitable treatment of almost all anomalies and of UTI and monitoring results can prevent permanent and dangerous results. Additionally children are especially susceptible to permanent kidney damage (ISM, 2005).

Diseases	N	%
Diabetes mellitus	10762	27.9
Type 1 DM	*1761*	*4.6*
Type 2 DM	*9001*	*23.3*
Hypertension	10177	26.4
Glomerulonephritis	3343	8.7
Polycystic kidney diseases	1707	4.4
Pyelonephritis	1616	4.2
Amyloidosis	793	2.1
Renal vascular disease	477	1.2
Other	3005	7.8
Unknown etiology	6210	16.1
Missing data	514	1.3
Total	38604	100.0

Table 1. Distribution of chronic HD patients followed, according to etiology.
National Hemodialysis, Transplantation and Nephrology Registry Report of Turkey (TSN, 2009).

Today it is known that every year, an average of 60 per million people are diagnosed with CKD in Turkey and we know that these patients consult a physician at a very late stage (Kocak, 1993). In the study, the urinary tract disease found in 543 (3.2 %) children coming to clinics for regular vaccinations without any complaints indicates that this is a disease progressing without any symptoms (Kıdak, 2010). In other studies, it is expressed that urinary tract disease constitutes a major health problem due to the reasons that its clinical symptoms can sometimes be very inconspicuous, that it is difficult to obtain valid urine samples and reach to a definitive diagnosis, has a high recurrence rate, is frequently coinciding with urogenital system anomalies, and that it leads to permanent kidney failure in the long term (El Nahas & Bello 2005; Ardissino et al. 2003; Prodjosudjadi, 2006; ISM, 2005).
Consequently, CKD is generally an insidious disease. Most patients are diagnosed with a kidney disease during routine examinations performed without any symptom or sign. Some of the etiologies of CKD are treatable diseases if they are diagnosed at early stages; thus CKD can be prevented or delayed. The most frequently seen and easily detected indicator of kidney damage is proteinuira (ISM, 2005).

3.4 Treatment

There are currently two main strategies to be followed for the treatment of CKD patients diagnosed with ESRD (El Nahas & Bello, 2005; Warady, 2007). These are;

- Dialysis and
- Kidney transplantation.

A good and regular dialysis treatment process is the first strategy to follow. Dialysis treatment which is the treatment method of ESRD is performed to improve the general condition of a patient, to restore water-electrolyte balance and to remove uremic toxins accumulated in the body. When we consider the 10 % possibility for CKD patients to undergo organ transplantation, the importance of dialysis in treatment of patients becomes apparent. Under good circumstances, the life expectancy of the patient can be 10 years in average and sometimes, though seldom, this can go up to 25 years (Kocak, 1993).

Kidney transplantation is the second strategy serving to far less number of patients and with which patients continue to hope for kidney transplantation waiting in the organ waiting lists. Advances in medical technology, improvements in surgical techniques and developments in post operative medications have made organ transplantation an effective and powerful treatment (Fuzzati, 2005). After successful kidney transplantations there remains no need for dialysis treatment and patients become independent. Therefore interest, on reasonable grounds, on human tissue and organ transplantations is continuously increasing.

The goal of these two strategies is to improve quality of life of patients and provide more permanent solutions to patients with transplantation of organs obtained through organ donation. However both strategies serving effectively to the ESRD patients are reactive approaches based on providing solutions after the problem has occurred. In other words, as in most reactive behaviour, actions are carried out after the problem has occurred based on a reactive planning algorithm.

3.5 Problem

Although the number of donors has been constantly increasing in all European countries, this said number is still not sufficient to meet existing donor kidney needs (Fuzzati, 2005). There has been a growing gap between the frequency ESRD in Turkey and in the world and organ donation (Fuzzati, 2005; Ateş, 1998). New alternative solutions are needed for "shortage of donor organs" problem which is still growing in the world. To solve this problem, scientists have been working on both epidemiology of the disease in terms of frequency and diagnosis and treatment management (Ardissino et al., 2003; El Nahas & Bello, 2005; Prodjosudjadi 2006; Warady & Chadha, 2007). In these studies, there is strong evidence that CKD can be screened and treated using simple laboratory tests. It is also indicated that with the same tests, cardiovascular risks causing CKD are lowered, the progression of renal diseases is slowed down, complications are delayed or eliminated (Kıdak, 2010; Levey, 2007). Therefore, in addition to the existing two strategies, new strategies to solve organ shortage problem are needed.

In order to make real and true assessment about CKD incidence and prevalence, epidemiologists and clinicians have been working on different population groups management (Ardissino et al., 2003; El Nahas & Bello, 2005; Warady & Chadha, 2007). Within this scope, protective medicine has been approached with a different understanding all around the world since it has been understood that only a medical perspective is not sufficient for healthcare issues which are increasing in numbers and becoming more complex and contribution of healthcare management sciences is also needed. Donor organ need, besides being a medical problem to be solved, is also a healthcare management problem and managerial solution options should also be considered. Here at this point proactive management approach comes to the scene (MacStravic, 2008; Overhage, 2008).

In some relevant studies conducted, efforts to slow down the progress of CKD and improve clinical results were evaluated and costs of such services were assessed. It is indicated that early diagnosis of CKD and early treatment of patients reduce the costs of the disease and improve clinical results (Jabs & Warady, 1999). At the same time, it is also concluded that early diagnosis diminishes the need for organ transplantation. The proactive management approach may lower the incidence rate of the disease, slow progress of the disease, and therefore improve clinical results and economic aspects of the disease (Khan & Amedia, 2008). In Pereira's study about renal anaemia management period, the importance of early diagnosis and aggressive treatment of anaemia which causes a serious mortality and morbidity in CKD is emphasized (Pereira, 2001). These studies demonstrate that proactive management approach is highly considered for the early diagnosis and treatment of kidney diseases.

3.6 Solution proposal - Proactive management approach in prevention of kidney transplantation

This chapter aims to contribute to the prevention of ESRD and hence decrease the number of kidney transplantations with proactive management approach. In proactive management approach, problems or uncertainties present in the development of ESRD must be defined. It will be advisable to identify what level of performance weaknesses or risks cause uncertainties or problems.

It is known that 10 % of ESRD patients have the chance of organ transplantation, that the disease develops and progress insidiously and most patients consult to a physician at later stages of the disease. When some diseases causing ESRD are detected at an earlier stage, they can be treated thus kidney disease can be prevented or delayed. In light of this information, the importance of the proactive approach becomes apparent. Since proactive approach means taking actions before the event, it is clearly understood that it is of vital importance to detect the signs of the insidious disease before it becomes apparent and monitor the cases. Proactive management of the disease represents an approach based on a desire for a future which will prevent the increase of the number of ESRD patients and on designing the future environment. The goal here is to establish the management structure which identifies risks not after but before patients become sick and takes necessary precautions.

What needs to be done is strategic analysis and this analysis is the starting point of proactive management. It is the stage where problems are defined again, strategies are developed and proactive planning is made (Dincer, 2005). Some basic questions are needed to be asked to make the analysis necessary at this stage (Teixidor, 2006). The first question to be asked in this regard is "what should we do to understand this uncertainty or problem?" This question is the basic question to identify and analyze characteristics of the origins of the problems causing ESRD. The second question is "how can we examine the uncertainty or the problem with proactive approach?" Proactive and reactive approaches address essentially the most prominent and the biggest problems. Identifying and defining problems in a healthy and accurate way will act as a guide not only for implementation but also for controlling activities. Some problems such as determining the implementation time can be solved very easily. Third question is "how can we understand whether the model is suitable and healthy?" The aim of this question is to prevent differences between goals and objectives although they are defined in a suitable and healthy manner and the implementation. Fourth question is "can the problem be identified and solved scientifically?" This question can help us to make progress with solving the problem and

also contribute to defining the limits and boundaries of activities. And fifth question is "what are the benefits of the approach and how can it be improved?" This final question is directly related with the basics of research and development activities (Teixidor, 2006).
In this respect, the existing problem should be redefined, the right question should be found and asked. With reactive approach, donor organ need is accepted as the main problem and organ donation is encouraged to be increased thus corrective actions can be taken. However, unless we address the real problems which render organs dysfunctional, donor organ need will grow despite increasing organ transplantations. Is the existing organ need a problem or a consequence of another problem? We need to identify what the problem is and for what we should look for solutions.
According to proactive management approach, the main question here is why there are so many organ failures. When we look into the problem with this approach one of the important options to improve the existing situation of organ transplantation is to lower the need for donor organs. Therefore, it is understood that there are critical processes in this field, which should be managed with proactive management approach; and the first of these processes is to determine the factors causing organ failure and to look for solutions. In other words, the purpose here is to minimise organ failures or to prevent organs from becoming dysfunctional.

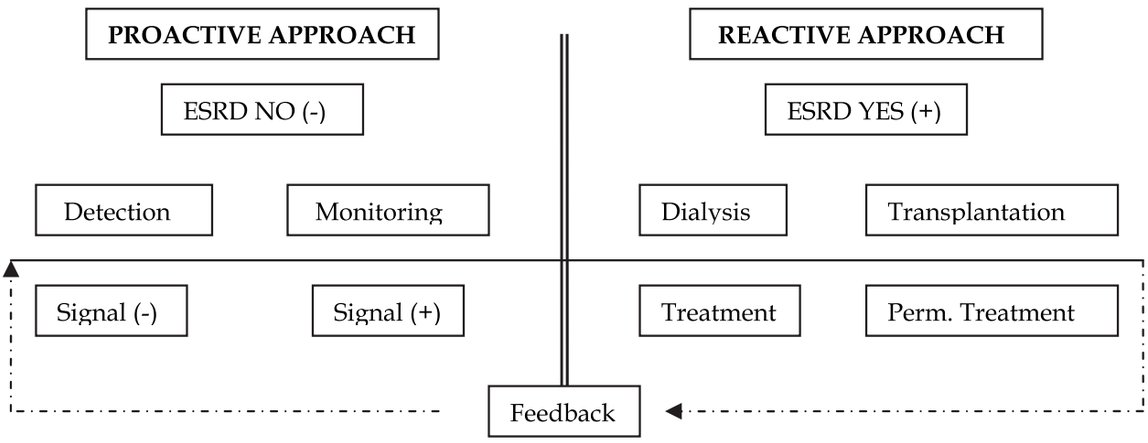


Fig. 1. ESRD in proactive and reactive approach processes

Proactive management approach, as seen in the above Figure 1 focuses on the stage before the disease develops. "Modern medicine" which includes preventive medicine can be considered as the common point between the approach and healthcare services. Accordingly, three main strategic plans; namely primary, secondary and tertiary prevention, can be made in relation to the proactive management of ESRD. These are (Irgil, 2006);

- Primary prevention level is to define risk factors for ESRD, control and monitor signals, and to prevent the disease before it starts and develops. Activities can be oriented to individuals or to the society. Special preventive measures for the diseases are included in this group.
- Secondary prevention level is early detection and treatment of symptoms and diseases causing ESRD and to reduce the number of severe cases. With this method, serious progression of the disease can be monitored, minimised or slowed down. It is a strategy applicable to the diseases which can be diagnosed at early stages and against which there are effective treatments.

- Tertiary prevention level is to prevent the progression of already developed diseases and its complications. It is to mitigate the problems caused by the disease. It enables to improve the life quality by preventing the progression of especially chronic diseases.

The main strategy of proactive management is to systematically investigate signals of the disease in otherwise healthy people before ESRD occurs and to monitor cases giving positive signs more closely taking risk factors into consideration. CKD gives out some signals before reaching to the disease stage. If these signals are detected early, evaluated correctly and necessary measures are taken, it is believed that the existing situation which could be described as the "organ shortage" can be improved and be more problem free. It is assumed that proactive management approach with early diagnosis of insidious kidney diseases, investigation of reasons, slowing progression and prevention of complications has a major effect on the prevention of future negative consequences. With the implementation of this approach, a third strategy could be added to the existing two strategies to solve the problem. Then, these three strategies are; to increase organ donation for more organ supply, to improve the life quality of existing patients by treating them and to work with proactive management approach to lower the need for donor organs.

4. Proactive management algorithm in prevention of kidney transplantation

Healthcare institutions are compelled to deal with diseases which develop as a result of common health risks that, for various reasons, are not evaluated correctly. Proactive methods and strategies are developed to prevent before it becomes a disease. Therefore, the importance of immediate implementation of such methods and strategies which can make the provision of healthcare services effective is clear. Otherwise, or if no new strategy is developed, more resources will be allocated for these services; organ shortage and this vicious circle will become increasingly problematic. In other words, since available structures and resources are not used effectively and efficiently, people who may be prevented from developing ESRD or who should not die of ESRD will continue to die.

In order to the healthcare services to be effective in a social sense i.e. to make the desired changes in the health status of the society, the healthcare services should have certain qualities. It would be useful to take such qualities into consideration when micro and macro planning, organising and delivering the healthcare services. Management in organisations are shaped according to the different structures in the organisation hierarchy. As seen in the Figure 2, there are 3 main management levels in an organisation. These are called senior management level, middle management level and lower management level. Each management level carries out different managerial activities. Accordingly, senior level managers are responsible for strategic management, middle level managers are responsible for functional and tactical management and lower level managers are responsible for operational and program management. There is a close relation among the plans made at these three management levels. Senior level plans are binding decisions for lower level plans. Plans of senior level management should provide guidance for lower level plans whereas lower management level plans should support senior level plans (Dincer, 2004). Plans made at these three levels should constitute a whole connected in terms of the goals and the activities of all units. Plan implementations should not conflict with each other. Realisation of strategic plans is possible only with the realisation of lower level plans. As the management level rises, scope of planning widens.

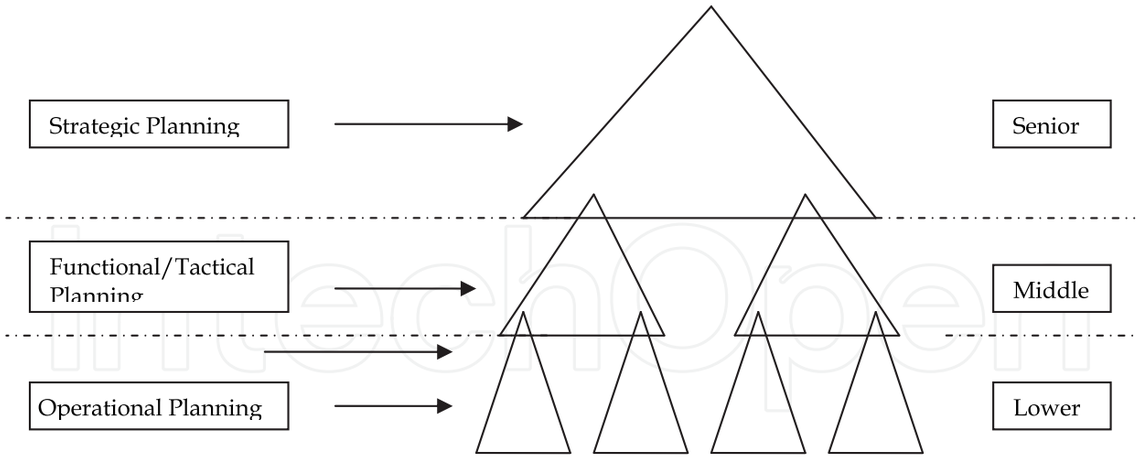


Fig. 2. Types of planning and organisation levels in proactive management (Kocel, 2005)

In line with the above information, ESRD prevention planning and implementation organisation is required through proactive management approach according to the management levels of the healthcare services. Healthy design of this stage plays an important role in the efficiency and success of implementation. Converting strategies into action plans requires suitable organisational structure. Organisation structure refers to differentiating of activities and work as vertical, horizontal and spatial to prevent and reduce ESRD. At the end of this differentiation, activities need to be coordinated. Differentiation is the process in which activities are described for each to management level and for each healthcare institution. These descriptions should be compatible with the characteristics of the work, people and institutions and goals of the organisation (Kocel, 2005). Therefore, to organise the implementation of reduction and prevention plan of ESRD using proactive management;

- Work to be carried out,
- Authorities and responsibilities of the individuals and organisations which carry out the work,
- Knowledge and skills necessary for the individuals and organisations which carry out the work should be defined.

To structure this implementation organisation; exogen factors such as goals, departments, necessary equipment, and endogen factors such as qualifications of employees and environmental factors are used. Senior management should link these factors with each other and define the structure. The structure achieved as a result of this process should be described with an organisation chart. At the same time main responsibilities, duties and authorisation relations which constitute this structure should be explained in a written document called the handbook (Kocel, 2005).

4.1 Proactive management algorithm in the health care organisation for prevention of ESRD

The management levels in the healthcare services organisation are respectively; senior management level is the Ministry of Health, middle management level is Local Health Directorates and lower level management is the management of local healthcare institutions. Each of these three main management levels should carry out different managerial activities within proactive management of ESRD. Therefore in the organisation of healthcare services to prevent and mitigate ESRD activities, authorities and responsibilities, duties of

individuals and organisations together with necessary information and competencies should be defined for all management levels. According to the above explained information, decision and planning types of the healthcare management regarding this implementation should be as following:

1. **Senior of Health Management - Ministry of Health:** Strategic planning and new politics
2. **Local Health Directorate**: Functional planning and tactics
3. **Primary Secondary and Tertiary Health Care Facilities - Family Physicians and Hospitals:** Detection and monitoring of ESRD candidates, treatments of patients for prevention of ESRD.

The first step in the algorithm is the integrated strategy of the senior management (Ministry of Health) which manages various institutions and various services. The senior management should develop new policies to prevent ESRD. The Local Health Directorates coordinating and organising activities of healthcare institutions in provinces should determine tactics to implement strategies. Lower management levels which are the management units to carry out activities for individuals and patients should develop implementation plans. Healthcare institutions in all three levels should carry out the activities assigned to them. At first, due to the reasons such as possible lack of information in the primary level healthcare institutions, terminology confusion, difficulties in the recording system, a coordinated work should be planned together with primary, secondary and tertiary health care levels. These activities which will be explained in detail later are shown collectively in Table 2. The study of Teixidor (2006) was referred to while preparing this table.

Ministry of Health Strategic Plannings	**Local Health Directorate Functional and Tactical Plannings**	**Health Care Institutions Operational Plannings**
• Strategic goals and objectives • Vision and mission • Population data (General) • Social and environmental conditions • Medical and technologic developments • Disease information and data • Regional/specific qualities • International aspect • Government regulations • Laws and legal factors • Financial issues • Clinical experiences	• Information flow • Personnel training • Population information (Local) • Capacities of institutions *-Primary* *-Secondary and Tertiary level* • Material supply • Demands of patients and patient relatives • Budgeting	• Business processes • Time plans • Continuity of resources • Quality of resources • Recording system • Collecting of data • Control systems

Table 2. Contents of plan types according to the management levels

4.2 Senior of health management – the Ministry of Health: Strategic planning and new politics

The first stage of proactive management is to identify long term goals which are a part of the strategic planning. This is done by the senior management of the organisation. The most

important feature of strategic planning is the time period set forth and the operational activities covered. A strategic plan maintains its qualities to the extent that the time period is prolonged and the plan deals with the organisation in its entirety (Kocel, 2005). The strategic planning under the responsibility of the senior management involves mainly identifying and solving problems in the external environment. Answering the questions about where the organisation will be in the long run, strategic planning is the process in which activities to determine the direction are defined.

"New" ways and strategies should be developed using proactive management approach to shape the future for ESRD on behalf of the healthcare services. Such "new" ways and strategies should be developed by the senior management. Therefore the main activity that the senior management (Ministry of Health) should carry out is strategic analysis which is the starting point of proactive management. At this point, the problem of kidney failure should be redefined, strategies should be developed and proactive plans including new policies should be prepared.

The main duties of the Ministry of Health are to protect individuals' and the society's health and to make, implement and enforce plans and programs covering the entire country for this purpose; to take all kinds of measures, establish necessary organisations or oversee that such organisations are established (Eren, 1985). Goals and objectives should be defined under the scope of prevention of ESRD; the defined vision and mission should be explained to all relevant units and institutions. Information about the present condition of the disease should be monitored and evaluated together with the epidemiologic result of the disease. Future path of the disease should be foreseen using suitable techniques and alternative plans should be prepared. Financial resources should be reviewed to make necessary allocations for the implementation. Medical technology that can prevent the disease should be explored, appropriate techniques should be identified. Characteristics and structure of the population should be studied to ascertain whether there are any local differences. Structural arrangements required for the success of the implementation should be made, legal and statutory requirements should be complied with. These are explained below (Teixidor, 2006; Kocel, 2005; Dincer, 2004);

- Vision and mission: This could be summarised as the way the senior management expresses its opinions about ESRD. What the basic services to prevent ESRD are, which patient groups are offered which services in which institutions, what the main technologies to be used in these institutions are, what the opinions are about the incidence and prevalence of the disease and what kind of image is desired should be identified. All these should be kept in writing and distributed to relevant people, mainly health care providers and institutions. Thus, health care providers will understand why they do what they do, use initiative and decide better about how they can contribute to this service. To achieve these, the senior management should combine existing realities with anticipated conditions to design a future hoped for ESRD. The senior management should visualise its vision regarding this disease, and express its dreams about the future outlook of the disease. The senior management should also define the "game plan" to prevent ESRD and to reduce the number of kidney transplantations.
- Strategic goals and objectives: Goals and objectives of the management play a central role both in decision making and planning. "New" methods should be developed using proactive management approach to shape the future of ESRD on behalf of the

healthcare services. The goals and objectives involving these new methods and strategies can be defined as the strategy to change the conditions. Change in ESRD can be achieved not through better treating patients but through changing the conditions of the existing situation. At this stage, the organisation should decide, in a given period of time, what and how much they want to achieve or where they want to be with regard to ESRD. The number of people screened for ESRD, the number of patients treated, the number of ESRD cases prevented, the desired incidence and prevalence rates, the number of personnel to be employed in a given time, for example 5 years later and the number of training programmes in this period of time should be determined. The most important principle of setting goals and objectives is that the goals are measurable, that they indicate necessary actions and have a time dimension.

- Population data (General): Is to analyse the structure of the population constituting the society. These analyses cover the age, sex, education, economic condition, place of residence etc and other characteristics of the population. Data obtained from these analyses enable managers to make accurate projections, to take proactive actions. This data allows them to identify the risks related with the changes that will happen to the structure of the population, and allows them to take necessary measures in advance. On the other hand, a population structure which can be defined, calculated and estimated will mitigate the risks included in the decision of the senior management. Thus, data about the structure of the population stands out as a secure way for resource planning of the future (Drucker, 2003).
- Social and environmental conditions: Changes and developments in social and environmental conditions are one of the most important determining factors in strategic planning decisions and implementation. Continuous changing of the environment and long time horizon of strategic planning further increases the uncertainty in the environment and emphasises its importance for the organisation. Threats and opportunities introduced by ESRD are evaluated in this context forming the decision focus of the senior management.
- Medical and technologic developments: Medical and technological developments are the fastest changing factors in the healthcare services. What is meant here by technology is the tools and equipment-devices together with the information and processes which are used in the operations. Medical materials, methods and processes used in screening, treatment and monitoring of ESRD, changes and improvements in the devices used should be followed closely. The existing structure and development potential of the technology both in the country and abroad should be identified. In order to do this, in which areas of activities the research and development funds are focused should be established.
- Disease information and data: People with ESRD risk nationwide should be identified, common characteristics of the patients diagnosed with ESRD should be established, results of medical treatments should be monitored, costs of the disease should be calculated, mortality rates and incidence and prevalence rates should be estimated. By investigating the epidemiology of the disease it will be easier to find the reasons of the problem, and parameters to be monitored in controlling activities will be identified. Researches regarding the etiology of the disease which is explained in this chapter and in other studies should be followed; parameters applied to the model should be established.
- Regional/specific characteristics: Tracking regional distribution of ESRD disease, related factors and characteristics is useful in mapping population with risk factors of

this disease and layering risk factors. The prevalence of the disease in certain regions, whether the distribution in cities and towns is clustered in certain areas should be investigated. Demographic characteristics of ESRD patients according to regions should be identified and reported to the concerned local health directorates (Varol, 2009). Infrastructures of the health care services in the regions should be examined, and compared with the regional characteristics of the disease.

- International aspect: Social and economic problems occurred due to ESRD and organ shortage problem should be monitored together in the international arena. The dimensions of the relevant social and economic problems experienced in the developed and developing countries at certain times should be explained. Perhaps if this problem continues to increase, ESRD approaches of all countries will have to be redesigned. Developments and changes with regard to the diagnosis, treatment and monitoring of the disease at the international level are of particular concern to senior managements.
- Government regulations: Governments and ministries are executive authorities. They are responsible for implementing the budget and the programme. Government regulations have strategic influence on defining working conditions about the strategic planning of the implementation, provision of materials and resources, deciding about motivational elements such as rewards, incentives. Furthermore, to increase the efficiency of the implementation, individuals and organisations which will be affected by the model should be informed, suggestions coming from these individuals and institutions should be received and evaluated, a structure to include suitable ones into the regulations should be created.
- Political and legal factors: Political tendencies and legal regulations at both national and international levels may change in time. Such regulations have effects on the success of the implementation of the government and local authorities. With political and legal regulations, in addition to the efforts to further the implementation, development strategies should continue to be created. Furthermore, strategic, political and legal developments in different platforms should be explored. It is advisable to build cooperation between different institutions such as education and social services and create separate mechanisms and structures for these institutions.
- Financial issues: Success of the implementation requires the provision of financial resources reserved for the planned services. And this depends on the balances in the financial structure. The important element here is that the activities planned to prevent ESRD and reduce the number of kidney transplantations should above all achieve the desired results. The beginning, development and maturation stages of the implementation should be defined. Implementation activities are affected by the changes in these stages. Changes in the financial requirements deemed necessary for these stages should be identified and met. Furthermore, the amount saved from the existing expenditures as a result of the implementation should be established and monitored; the possibility of these savings returning to other investment areas in the healthcare services should be investigated.
- Clinical experiences: Clinical studies both national and international should be followed; the applicability of the innovations achieved through research and development activities, their suitability to the country's conditions, financial effectiveness should be monitored comparing long term results. Hence, existing associations (e.g. TSN) should be actively effective; they should support and improve

clinical studies not only about organ transplantation and dialysis but also to prevent ESRD nationwide. Or new structures for which clinical studies have been completed at all three stages to prevent and monitor this disease can be created.

4.3 Local health directorate: Functional plannings and tactics

Local health directorates are responsible for planning and delivering functional and tactical planning services, making human resources and finance related decisions. A directorate makes the connection between strategic plans and operational plans. It is focused more on increasing the efficiency of the resources. At this level, plans are closer to implementation stage and the directorate provides coordination of activities. At this stage, cooperation between organisations, collaboration and mutual support become prominent. The effect of existing organisation on the success of the planned new strategies and new activities should be evaluated. These plans about the synergy of inter-organisational harmony and skills allow to build a connection between the strengths and weaknesses of the organisation and the desired objectives (Dincer, 2005).

- Information flow: Information flow should be addressed in two main groups. The first is the information flow among the levels of the healthcare services, and the second is the information flow among the healthcare management levels. Thus an information flow effectively established between healthcare institutions will enable individuals and organisations to easily reach to information. Cooperation and sharing that ensure an information flow via the internet among the primary, secondary and tertiary level healthcare services will also increase the value of the present infrastructure of the organisation. This structure will allow the problems and opportunities which could not previously be noticed to be seen. With the strengthening of the information flow both between organisations and between organisations and individuals more synergy will be created and the information flow between the levels of healthcare services will become healthier.

  The local health directorates play an effective role in providing information flow between the healthcare management levels. The key role of the Directorates stems from the fact that there is a continuous information and data flow coming from healthcare institutions and they are the local authorities to evaluate such information. Relevant branches of the directorates should monitor and control the results of the implementation comparing them with the plans and goals. The implementation status of the plans and early detection and correcting possible deviations from the plans are vital for the success of the implementation. The local health directorates should periodically report data and information they receive in a predefined format to the senior management (Ministry of Health). This reporting may allow the senior management to follow the implementation. Therefore strategic plans can be controlled and updated.

  Provision of information flow will enable the information flow between primary healthcare institutions which are one of the most important bases of the implementation and hospitals. In order to achieve this there should be a computer network ready to be used. An effective computer network is as vital as the blood circulation in a body in terms of sharing information and generating new information; it will strengthen the connection between the local healthcare directorates and the senior management in addition to the above institutions.

- Personnel training: In this category, teams consisting of doctors and nurses working in the primary level institutions should receive training. Training materials should be prepared by nephrologists, urologists, other clinicians and relevant healthcare services managers. The training materials should consist of intelligible work flow algorithms and be of standard quality nationwide. Trainings of personnel in groups of predefined numbers in a province should be given, if applicable, by expert teams working in the same province. Here the training activities should include operational activities as well as the information about the importance of clinical substructure, registration system, provision of communication and information flow.
- Population information (Local): With the demographic information about the local population, data providing a basis for the planning of the implementation can be prepared. Population and its characteristics registered with primary healthcare institutions or family physicians in that region should be identified. Risk groups in male, female, infant, children and senior population over 60 years of age registered with the primary healthcare institutions which represent the basis for ESRD screening should be identified. To contribute to the ESRD screening activities, information about changes of residence and household density should be obtained.
- Institution capacity: In this category, primary, secondary and tertiary healthcare services for reducing kidney transplantation and preventing ESRD in line with proactive approach should be explained; capacities and roles of these healthcare institutions should be defined.
  - Primary healthcare institutions: The number of primary health care institutions and family physicians in the province should be reviewed. Those who execute the programme at the primary level are family physicians. Therefore, first the quality of accuracy and content of the data of population registered with family physicians should be controlled; problems, if any, should be solved. Additionally, physical structure, number of rooms, laboratory infrastructure, availability, number of employees and their qualifications, consumables and the condition of equipment of institutions, daily, monthly and yearly number of patients in a routine schedule should be reviewed. The number of people to be screened in a given period of time within the capacity of each family practice should be specified. Computer network providing information flow and data processing programme to be used, connections with other people and institutions should be checked.
  - Second and tertiary health care institutions: The purpose of determining hospital capacities is to define their limits in terms of providing treatment to all diagnosed patients. Hospital personnel medically and administratively responsible for the programme should be identified. Number of specialist physicians in the relevant specialty, number of nurses, the quality of laboratory and specific tests, necessary equipment and devices, number of beds and yearly number of patients and number of operations of secondary healthcare institutions in a province should be reviewed. Furthermore, localisations of hospitals should be reviewed to determine with which primary healthcare institutions they are connected. Tertiary health care training and research hospitals should be designated for the patients who require further research and treatment. Yet, the number of nephrologists, paediatric nephrologists and other specialists and other assets of these institutions should be

established. In order to implement strategic plans, number of estimated patients and capacity targets should be identified to provide treatment to all diagnosed patients. It should to determine compatibility with the functional plans. At the same time a structure to provide information flow should be established.

- Provision of materials: Infrastructure of the institutions at all three levels should be examined. Human force, materials, devices, equipment and information flow infrastructure should be reviewed. Personnel shortage, if any, should be solved, and employees should be equipped with necessary information through trainings. Consumables for all institutions, especially urine testing strips, urine collection containers etc should be supplied continuously for primary health care providers.
- Demands of patients and patient relatives: The main goal of the implementation is ESRD patients thus their demands are important. Increase of patients' awareness, their opinions about the medical and support services provided changes of the preferences of patients along the process and factors affecting those have an influence on the understanding and sensitivity of the managers towards patients' demands. Demands and wishes of patients which may be expressed during diagnosis, examination or treatment stages are vital to uncover and solve existing problems. Identifying the problems experienced by patients and their relatives and by those who were treated in the past play an important role for the success of the implementation. Demands and expectations of patients have an impact on the screening monitoring and treatment plans of ESRD and creating algorithms. Identifying medical and social needs of patients will improve patient satisfaction and contribute to faster and lower cost treatment and recovery of patients.
- Budgeting: is to express the plans and the anticipated results in numbers. This activity involves measuring and calculating in numbers and expressing in monetary terms all the activities such as human force, working hours, devices and equipments used etc. Budgeting shows the outcome of the model, what kind of earnings there will be and what level of resources is needed. Obtaining and using the resources economically, effectively and efficiently is necessary to evaluate the performance of the implementation model. It also enables the implementation to be transparent, its accountability to be maintained. Budgeting enables that the results of the applied strategy can be reviewed with different perspectives and the reasons behind can be studied.

4.4 Primary secondary and tertiary health care facilities-family physicians and hospitals: Operational planning, detection and monitoring of ESRD candidates, treatments of patients for ESRD

Multi-level health care services model is used to provide health care services. Multi level health care services refer to providing services which are complementary to each other. This classification involves primary health care services, secondary health care services and tertiary health care services (Hayran, 1998; Kartal, 2004). The main purpose of having multi-level health care services is to enable people to have the right kind of services at the right place. This multi-level structure of health care services ensures that the services provided are efficient and effective and prevents unnecessary utilisation of resources (Belek, 2001). There should be an integrity between the levels of health care services and these services

should be provided in coordination. The one which is the most available one to the public and the most frequently used among health care services is the primary health care service. In an effective health care system there should be a relation between the levels. In most of the countries, people are first required to use primary health care services. Provided that primary health care providers find it suitable and necessary, other levels, namely secondary and tertiary can be utilised (Kavuncubası, 2000).

Operational planning is to plan implementation activities. This is the stage which comes after the plans are prepared in line with the objectives, approved according to the operational conditions, and the alternatives to be implemented are identified. Implementation plans should be prepared in a more detailed manner; how and by whom, where and when each activity to reach the goal will be carried out should be explained. At the same time, implementation plans should describe the structure of the organisation and should also include coordination activities (Gözlükaya, 2007).

The purpose of operational planning is to screen patients with ESRD risk, to treat and monitor ESRD patients. Therefore, provision of health care services requires an effort which involves and coordinates all three levels. At this stage, primary, secondary and tertiary prevention principles explained in the proactive management of ESRD are appropriately coordinated between the three levels of health care services.

The success of the implementation depends on the power of the infrastructure of the health care services organisation. Suitability of the organisation's structure, accessibility level of the services, effectiveness of the communication and correspondence systems, technologic advantages of the organisation, cooperation and coordination, qualifications and motivation of human resources, the quality of the materials, devices and equipment used, and maintenance of continuity are the main elements defining the strength of the infrastructure. Success will be achieved within the existing activities of the health care institutions, with the help of the compatibility of the existing resources and structures with the resources necessary for the implementation aimed with proactive approach.

4.4.1 Primary health care facilities: (Family physicians, health centres)

Primary health care services involve the services which combine and provide preventive health care services together with home care and outpatient health care services. These are the health care services which are designed in a way that people can easily access to and use. Healthcare institutions providing these services are the basic and important service facilities which people refer to first. These services are provided in facilities which are positioned and designed to be in locations where people in that area can easily reach to. Primary health care services are considered to be the main starting point in defining health plans and policies of countries, and achieving health care goals (Rico, 2003). These services, depending on the individual country, are provided either in family practices or in clinics.

Primary health care institutions constitute the basis of proactive management implementation with regard to prevention of ESRD due to their availability throughout the country, accessibility and personal data infrastructure. Special preventive measures for diseases are planned in these institutions. The purpose here is to screen and control predefined signals of the risk factors of ESRD, to prevent the disease before it develops. Planned activities should be designed, in addition to addressing individuals and the society,

to detect otherwise healthy people who have underlying risk factors without showing any signs or symptoms. Screening and monitoring the symptoms and the diseases defined in the algorithm should be made in these institutions which have an integrated service approach.

- Business processes: Processes and work flows regarding the activities carried out in primary health care. Certain norms should be created for these. Designing business processes allows the distribution of strategic and tactical plans to lower level units and people. In addition to business processes, short term programme objectives or personal success goals should be defined.
- Time planning: Time planning helps to steer the strength of the organisation towards goals and objectives. Time planning is one of the critical processes determining the contribution of the activities for the efficiency. In order to do this, the plan should be kept under control and necessary monitoring should be made to detect any problem. With the help of a schedule, each responsible person can both create his/her own plan and define and track cooperative work activities with other people With time planning; activities for ESRD which are important and not urgent can be identified; those that are vital and have the priority can be emphasised and prioritised.
- Continuity of resources: The final objective of screening and monitoring activities of ESRD is to continue their existence. Availability and continuity of the model depends on the success of the results. Existence and continuity of the resources is also closely related with the success and improvement of the model.
- Quality of resources: Quality of the resources used in ESRD screening has an important role in the implementation of the model. Improving the quality and the features of the resources consisting of materials, equipment and devices is important for successful results and to lower the costs.
- Recording system: Developments in patient recording system contribute significantly to the improvement of the health care services provided during ESRD screening and monitoring activities. The recording system combines physician's records, laboratory records and health care providers' records in all three levels. Here, it should be stressed that the hidden quality of the primary health care services is the recording system.
- Collecting data: Since ESRD is one of the most important public health problems, healthcare data systems are the biggest data sources for this kind of screening monitoring activities. Today, owing to the developments in information systems and communication technologies a lot of medical and health care data can be stored in digital media and are easily accessible. Information systems created with the purpose of collecting, processing and sharing data contain demographic information, disease and treatment condition, tests made, invoicing and administrative information about patients (Yıldırım, 2007).
- Control systems: Control systems are used to control the conformity of the results achieved through the implementation model with the planned outcomes and whether the anticipated success has been achieved. Control process is closely related with the other functions of the model, notably planning. This process which determines the conformity of the strategic plans and plans of implementation with the current situation should be conducted in a very delicate manner and control techniques suitable for the plans should be used.

Urine samples of those coming to primary health care institutions should be tested for leucocytes, nitrite, albumin, protein, blood and glucose parameters using simple analysis techniques (strip); in the event that any of the parameters is found positive, these findings should be subjected to further testing (Kıdak, 2010; Levey, 2007). Since primary health care institutions are the first to accept people, they act as gate keepers, filters for secondary health care institutions (Willems, 2001). Therefore, screening should first be carried out in primary health care institutions; positive cases diagnosed by health care personnel working in these institutions should be referred to secondary and tertiary health care institutions. Gate keeping means that primary health care physicians have the authority to control the access of patients to other levels of the health care system and that patients could access to secondary and tertiary health care services only by referrals of primary health care physicians (Guy, 2001). Therefore, patients with values outside the normal ranges should be planned to be referred to nephrology clinics of consultant hospitals (centres) of the model for further tests and treatment. Screenings can be made during check-ups of healthy people or when they come to health care institutions for other reasons. Positive cases found during these checks should be referred to higher level institutions and results and feedback should be tracked again by primary health care institutions.

The important point to be emphasized in this chapter is the effective role primary health care institutions play in reducing the number of kidney transplantations. This role is basically the result of the integrated/holistic perspective already present in primary health care services. The efficiency level of the role is directly linked to the strength of the primary health care services infrastructure. The stronger this infrastructure is the more efficient the model will work and ease the workload of secondary and tertiary health care institutions.

4.4.2 Secondary and tertiary health care facilities (hospitals)

Secondary health care services consist of inpatient and outpatient health care services including examination, diagnosis, treatment and rehabilitation. They are hospital-based services. They are also referred to as secondary level or therapeutic health care services. The main function of a hospital should be to provide inpatient treatments; outpatient clinic services are not their main services. Secondary health care services in which more advanced technologies are used are evaluated in two groups; outpatient and inpatient therapeutic health care services (DPT, 1989). Tertiary health care institutions, in addition to secondary health care services, are the places where high end medical technologies are used, diseases requiring research to diagnose and treat are intended to be treated. These hospitals are advanced treatment centres where cutting edge medical technologies are used. These mostly include university hospitals, training and research hospitals and specialty hospitals. Therapeutic health care services provided in secondary and tertiary levels involve situations where diseases are treated. These services consist of medical and complementary medical services.

In secondary and tertiary health care institutions early diagnosis and treatment of signs and symptoms leading to ESRD and mitigating severe conditions should be aimed. Monitoring, minimising and delaying the progress of the diseases which can be diagnosed at early stages and be treated effectively should be aimed. Thus, positive cases diagnosed in primary health care institutions should be referred to secondary and tertiary health care institutions

(hospitals). Here, people with CKD risk should be identified and monitored for CKD and progression of ESRD in patients diagnosed with CKD should be halted or retarded. Especially patients with diabetes, cardiovascular diseases, high blood pressure, hyperlipidemia, malignancy etc should be closely monitored (Obrador & Pereira, 2010). Urine samples received by health care centres should be tested again with urine test strips and urine microscopy for pyuria and/or nitrite positive. Urine cultures should be taken directly from asymptomatic patients; and from symptomatic patients and patients in whose urine culture samples growth is detected, urine cultures should be taken with catheters.
In hospitals, patients who have developed the disease earlier should be treated to prevent progression and complications. The goal here is to prevent problems caused by the disease and to improve the quality of life by preventing especially the progression of chronic diseases.

4.4.3 Evaluation and sharing of data

One of the most important stages of proactive management implementation is the stage of data collection, evaluation and converting into information. The main purpose of this stage is to develop an early warning and monitoring system. The information obtained will support control activities (measuring the level of goal achievement). The information should be used in updating organisational goals and developing new strategies.
Some of the important elements of the proactive management approach are to develop proactive monitoring tools, activate recording system and improve data flow process (Daleiden-Burns & Stiles, 2007). For this purpose in order to collect necessary information from all three levels, tracking forms which include and detail all data should be created and distributed to the institutions. Clinical examination and laboratory test results on these forms together with monthly activity reports of the institutions should be sent to the Local Health Directorates (relevant department) in electronic format and data should be systematically evaluated. The database created will assist decision makers to make more accurate decisions when defining strategies and goals. On one side, organisational information is produced and shared and on the other side this will contribute to transforming the entire organisation into a **learning organisation**.
In light of this information, despite the negative situation described above, it is observed that most of the present problems can be solved even with the available resources. The existing health care service infrastructure allows developments and improvements to be effected on health care services without necessitating large scale changes. The efficiency and effectiveness of health care services regarding screening and monitoring of ESRD should be improved. With such new strategies existing resources can be utilised more effectively, and with the prevention of ESRD without increasing the resources an improvement in efficiency will be achieved.

5. Application of proactive management model and its results

Up to that part of chapter, theoretical frame work of proactive management approach to prevent ESRD was explained. A summary of the study wchich described the implemented proactive management model is given in last part of the Chapter. This study was published with the title “Decreasing the need for kidney transplantation through proactive management” in Journal of Nobel Medicus in 2010.

In order to prevent ESRD, a program has been started in 2005 in the city of Izmir, Turkey. The aim of this program was to determine the incidence of UTIs in children and diagnose kidney anomalies at an early stage. Also the objective of this program was to start treating the affected children immediately and prevent the occurence of permanent kidney damage. This program, under the leadership of Healt Authority in Izmir city, academicians and specialists in pediatric nephrology that working in two training and research hospitals were included in this study. This study includes all the primary care facilities within the boundaries of the city of Izmir with 239 (91%) health centers and 25 (9%) maternity and child health and family planning centers. The program has been planned and realized for a period of one year between 2005 and 2006. The target grup of the study consisted of all the children within the city limits who applied to these healthcare facilities for inoculation. The most appropriate and efficacious period to reach the target age group has been chosen as the rubella vaccination scheduled at the 9th month, and the diphtheria, pertussis and tetanus boosters together with the polio booster at the 16th month. The population of Izmir is 3.5 million people and the population at the age of 0 is around 45 thousand.

In this study, teams from each facility consisting of a physician and a nurse or midwife (responsible of the laboratuar) have been given a training. The training material has been prepared by the teams serving at the children's nephrology clinics of the related hospitals and the same team also completed the training of the 528 employees in groups of 50. The urine samples of the children applying to primary care facilities have been tested for leukocytes, nitrites, proteins, blood and glucose parameters using a strip. If one of these parameters were positive, the cases have been taken under further examination. The cases outside the normal values are planned to be referred to the pediatric nephrology clinics of the advising (central) hospitals of the project for further analysis and treatment. The urine samples of the cases referred to the centers have been re-analysed using strips and urine microscopy, and bag and urine cultures have been taken from the asymptomatic patients positive for pyuria and/or nitrites. The symptomatic patients and those whose bag and urine cultures showed evidence of multiplication have been taken catheterized culture specimens for the final diagnosis of the UTI. Data collection forms have been designed, printed and distributed for the documentation of the project. Every month, all the urine test results documented with these forms have been sent digitally to the ACSAP Department of the Local Health Authority and assessed using frequency analysis.

Within the one year period when the study was conducted, 16908 children in Izmir aged 0-30 months have been assessed for urinary tract infections. Of these 9080 (53.7%) were male and 7828 (46.3%) were female. Their mean age was 15.6±13.4 months with a median value of 12 months; and the age distribution was 0 to 30 months. During the first evaluations made in the primary care facilities using a urine strip, the samples taken from 14098 (83.4%) children were assessed as normal, whereas 2810 (14.8%) samples tested positive for findings. The 302 (1.8%) children who tested positive have been treated in the primary health facilities, 2508 (14.8%) children have been referred to screening centers for further analysis. Among these children referred to the centers, 1096 (44%) reached the screening centers, whereas 1412 (56%) did not. 490 (44.7%) of the 1096 cases evaluated further in the screening centers have been assessed as normal while 543 (49.5%) of them were classified as pathological. 483 (44.1%) of these cases had UTI, 32 (2.9%) proteinuria, 28 (2.6%) hematuria and 27 (2.5%) urogenital anomalies. 27 (2.5%) patients having UTI together with a urogenital

anomaly have been detected. Among the patients in this last group, 63 (5.8%) have discontinued investigations after the first examination (Table 3).

Evaluated Children	Number	Ratio (%)	Further Evaluation	Number	Ratio (%)
Total	16908	100.0	Total	1096	100
Normal	14098	83.4	Normal	490	44.7
Abnormal (Positive finding)	2810	16.6	Pathological	543	49.5
-Treated	*302*	*1.8*	*-UTI*	*483*	*44.1*
-Referred to hospital	*2508*	*14.8*	*-Proteinuria*	*32*	*2.9*
			-Hematuria	*28*	*2.6*
			Discontinued	63	5.8

Table 3. Results of the evaluated cases and the cases after further evaluation

The most important result of this study is the revelation of the fact that the urinary tract disease detected in 543 children (3.2%) who had no complaints at all and had applied to the local healthcare facility only for vaccination, has been demonstrated to be a disease progressing insidiously without giving any evidence. The main issue here is that most of these cases are preventable cases of UTI (483). This number is 2.8% of all the children screened. According to the study findings, there have been a significant number of cases without any complaints or clinical evidence. Of course not all of the detected cases shall develop CKD; but still, unless they are treated appropriately, all of them are candidates for CKD.

This study constitutes an important example for the training, solidification and application of the infrastructure, and the collection and evaluation of the data throughout the three steps in healthcare services. Evaluation of the targeted number of children and complete training supports this view. As in this study, the primary, secondary and tertiary health services may be supplementary and complementary for each other even in a highly technical subject like organ transplantation. The study has also shown that the health system must be managed with a multidisciplinary approach for a more effective and productive use of the sources allocated to healthcare services.

Another finding of the study, that only 1069 of all the cases that tested positive in primary care facilities applied to screening centers and that some of the cases discontinued tests and treatment after the initial application to the centers indicates the shortcomings of this cooperative effort that must be worked on. In additionally, this study pointed out that proactive monitoring systems as a vital part of this proactive management approach must therefore be formed with the registration system activated and the data flow process improved.

6. Conclusion

Evidently, the application of screening and prevention programs in order to reduce the need for kidney transplants arises as a basic necessity. Therefore, through the proactive management approach involving early diagnosis and screening programs, preventable

etiologies of ESRD such as UTIs, diabetes mellitus, hypertension, etc beneath the visible part of the iceberg can be diagnosed and treated at an early stage and the number of the ESRD cases may be reduced. The early diagnosis and screening techniques must be in a way applicable in primary care facilities. This screening test must be integrated into the routine healthcare. This method will help reduce the number of the patients undergoing dialysis and waiting for an organ transplant, making comprehensive social and economic improvement possible.

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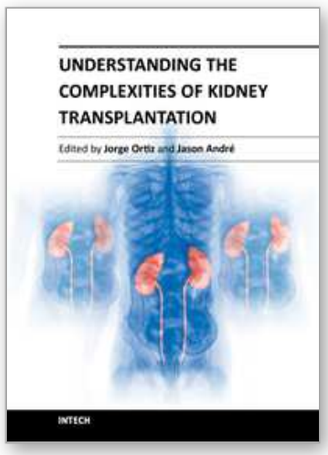
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Kidney transplantation is a complex field that incorporates several different specialties to manage the transplant patient. This book was created because of the importance of kidney transplantation. This volume focuses on the complexities of the transplant patient. In particular, there is a focus on the comorbidities and special considerations for a transplant patient and how they affect kidney transplant outcomes. Contributors to this book are from all over the world and are experts in their individual fields. They were all individually approached to add a chapter to this book and with their efforts this book was formed. Understanding the Complexities of Kidney Transplantation gives the reader an excellent foundation to build upon to truly understand kidney transplantation.

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