Saudi Center for Organ Transplantation

SCOT

Annual Report for Organ Transplantation in Kingdom of Saudi Arabia

2020

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Statistical Summary

Deceased Organ Transplantation after Brain Death

Deceased Donation after Brain Death

408 *Deceased Brain Death donors reported in 2020*

Possible Donors	Potential Donors	Eligible Donors	Consented Donors	Actual Donors	Utilized Donors
408	286	230	74	65	63

Over the years, number of actual and possible DBD donors remains further diverged. Overall utilization rate of the possible donors is approximately 15% in 2020.*

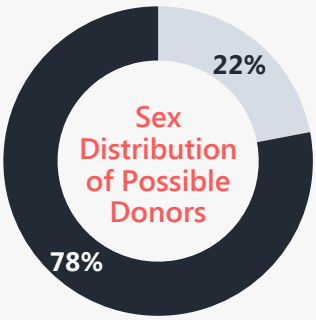
The highest number of possible DBD donors was obtained from Riyadh region with 183 possible, 150 potential, 125 eligible, 33 consents, 31 actual cases and 30 utilized donors.

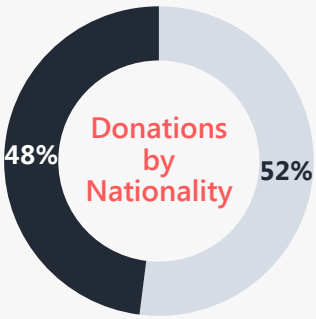
Total Number of Possible Donors Reported to SCOT between 1986-2020

14,139

Female **3,040**

Male **11,099**





Saudi **7,357**

Non-Saudi **6,782**

Conversion Rate of Deceased Donation Critical Pathway

Undocumented	Not-Approached	Family Refusal	Not-Recovered
Documented	Approached	Consented	Recovered

*Utilization rate = Absolute Number of Possible DBD / Absolute Number of Utilized DBD.
Greater values indicate better utilization of donors

Statistical Summary

Hospital Contribution in Organ Donation Program

Hospital Contribution in Organ Donation Program

Utilization Rate* by Hospital Categories in KSA

Greater than 20 ICU Beds	**11%**	*Number of Possible DD reported 235*
10-20 ICU Beds	**11%**	*Number of Possible DD reported 84*
Less than 10 ICU Beds	**14%**	*Number of Possible DD reported 59*

Top 3 Hospital Contribution in Organ Donation Program

King Saud Medical City Riyadh

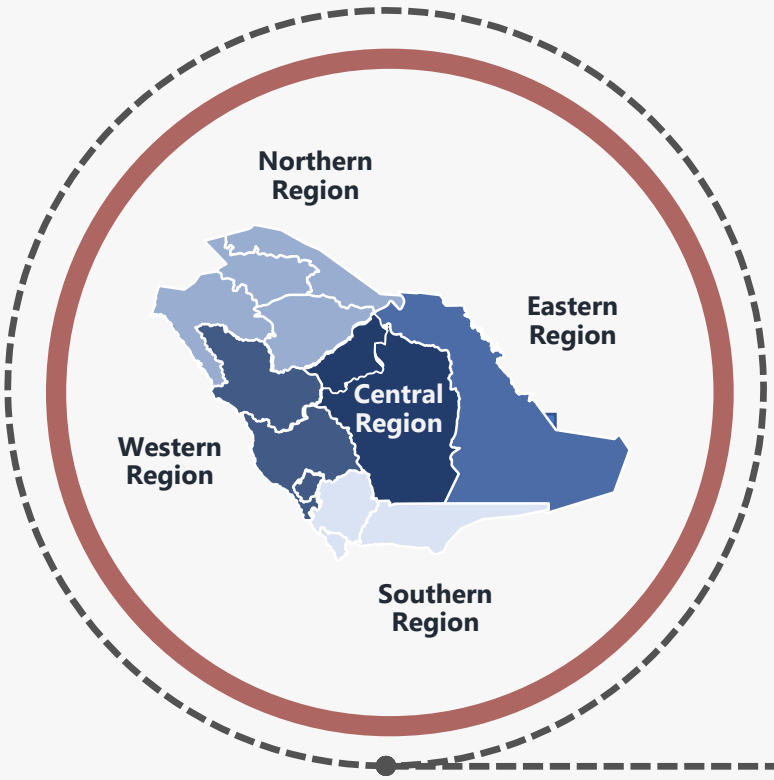
- 60 Possible
- 45 Eligible
- 14 Utilized

King Abdulaziz Medical City Riyadh

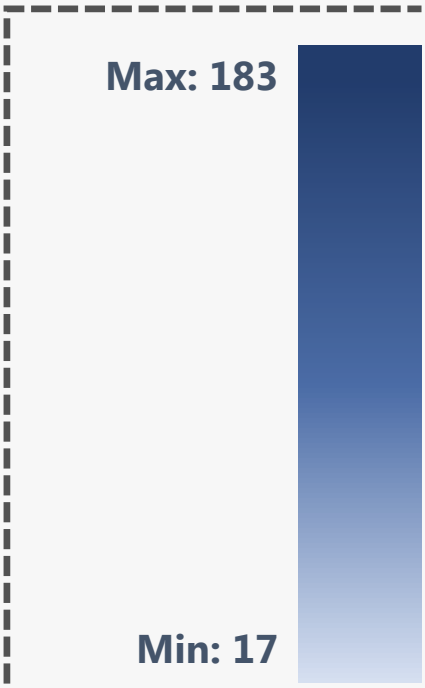
- 30 Possible
- 18 Eligible
- 5 Utilized

Al Noor Specialist Hospital Makkah

- 17 Possible
- 5 Eligible



Possible DBD Regional Distribution



*Utilization rate = Absolute Number of Possible DBD / Absolute Number of Utilized DBD.
Greater values indicate better utilization of donors

Statistical Summary

Liver and Kidney Transplantation

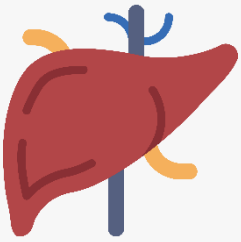
Liver and Kidney Transplantation

Total Number of Kidney Transplanted Inside the Kingdom of Saudi Arabia, 1979-2020

14,190

Total Number of Kidney Transplanted Inside the Kingdom of Saudi Arabia, 2020

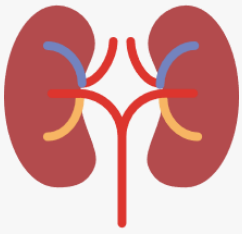
549



Total Number of Liver Transplantation by Activity Breakdown, 1990-2020

Number of Transplanted Livers from Deceased Donors	1,196
Number of Transplanted Livers from Living Related Donors	1,697
Number of Transplanted Livers from Living Unrelated Donors	173

Total Number of Kidney Transplantation by Activity Breakdown, 1979-2020



Number of Transplanted Kidneys from Deceased Donors	3,466
Number of Transplanted Kidneys from Living Related Donors	9,894
Number of Transplanted Kidneys from Living Unrelated Donors	830

Total Number of Livers Transplanted Inside the Kingdom of Saudi Arabia, 1990-2020

3,066

Total Number of Livers Transplanted Inside the Kingdom of Saudi Arabia, 2020

244

Statistical Summary

Heart, Lung and Pancreas Transplantation

Heart Transplantation

28 hearts were transplanted in 2020

Hearts transplanted from 1986-2020. **477**

King Faisal Specialist Hospital & Research Center (20) and Prince Sultan Cardiac Center (8) a totral of 28 deceased hearts transplants in Riyadh.

Riyadh Region

21 heart for valves were collected in 2020

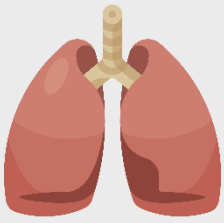
Total Heart for valves collected from 1993-2019. **728**

From the 74 deceased donors, all consented for heart donation (100%). 49 hearts were recovered, 28 were transplanted and 21 were collected as HFV.

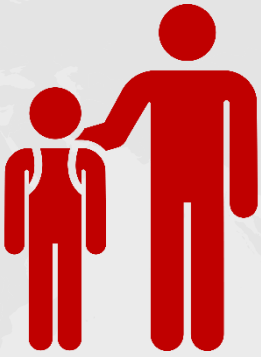
Lung Transplantation

35 lungs were transplanted in 2020

Total lungs transplanted from 1991-2020 **458**



From this 458 lung transplantations majority of them, 438 transplanted lungs was transplanted in KFSH, Riyadh and 16 in KFSH, Jeddah and 4 in KFH, Jeddah.

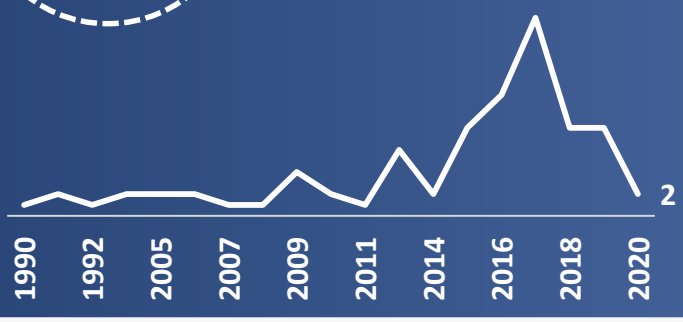


In 2020, 35 deceased lungs were transplanted to 20 recipients inside the kingdom and all were transplanted to adults.

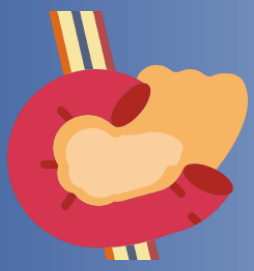
Pancreas Transplantation

82

Number of cumulative deceased pancreas transplantation from 1990-2020. In 2020, 2 pancreas was transplanted.



In 2020, 64 consented pancreas donors recovered, 54 were consented and offered in KSA, wherein, 2 pancreas were transplanted and 46 were non-recovered.



In 2020, 2 pancreas were transplanted by King Faisal Specialist Hospital and Research Center.

Statistical Summary

Corneal Recovery, Bone Banking and Intestinal Transplantation

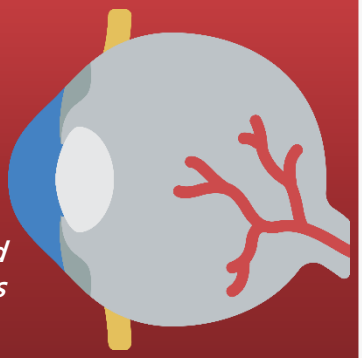
Corneal Recovery

715

Number of cumulative corneal recovered locally in Saudi Arabia 1983-2020 Number of recovered corneas in 2020 was 4.

33,728

Number of cumulative corneal recovered abroad in 1983-2020. Number of corneas recovered from abroad in 2020 was 612.



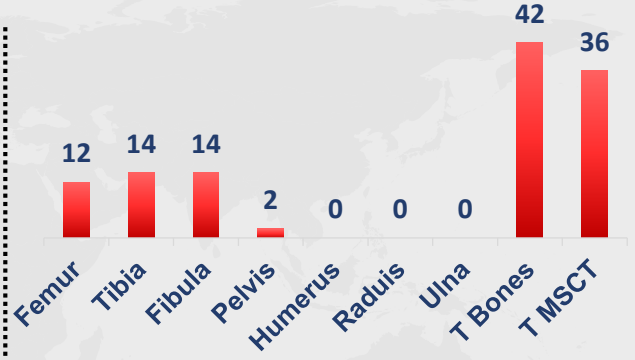
Bone Banking

564

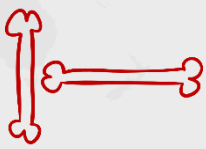
Number of cumulative recovered deceased bones from 2009-2020. Number of recovered bones 2020 was 42.

242

Number of cumulative recovered musculoskeletal connective tissue (MSKT) 2009-2020. Number of recovered MSKT in 2019 was 36.



Performance of deceased bone and MSCT recovery in currently active national bone bank in 2020

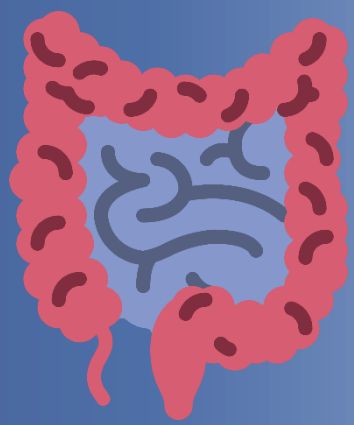


Intestinal Transplantation

8

Number of Small Bowel Transplantation 2016-2020 Types are multivesicular and isolated.

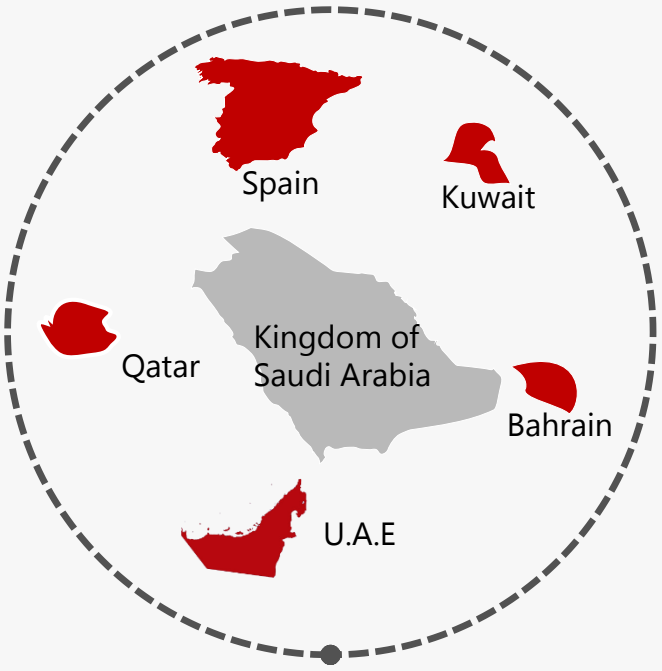
Intestinal or small bowel transplantation program initiated during the year 2016, first performed in King Faisal Specialist Hospital and Research Center (KFSH & RC) Riyadh.



Statistical Summary

Organ Sharing between KSA and GCC

Organ Sharing between KSA and GCC 1996-2020



Total Recovered

478

Total Transplanted

414

	Recovered	Transplanted		Recovered	Transplanted
Kidney	88	79	Lung	108	99
Liver	220	186	Pancreas	3	3
Heart	59	47	Tissues, Heart for Valves	75	

Comparison of Estimated Total Cost of Organs and Tissues Transplanted Inside and Outside the Kingdom 2020

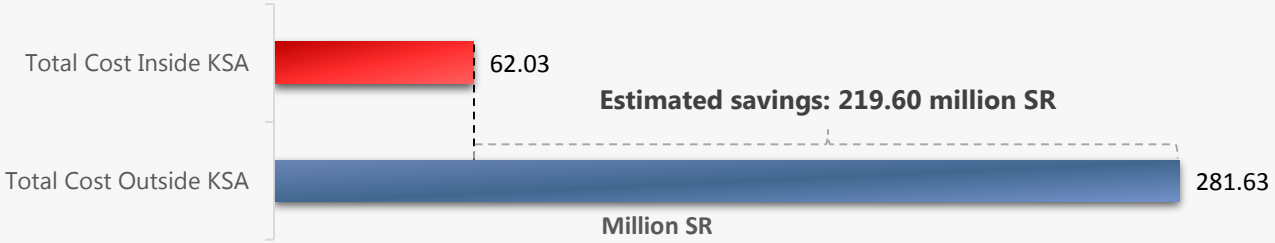
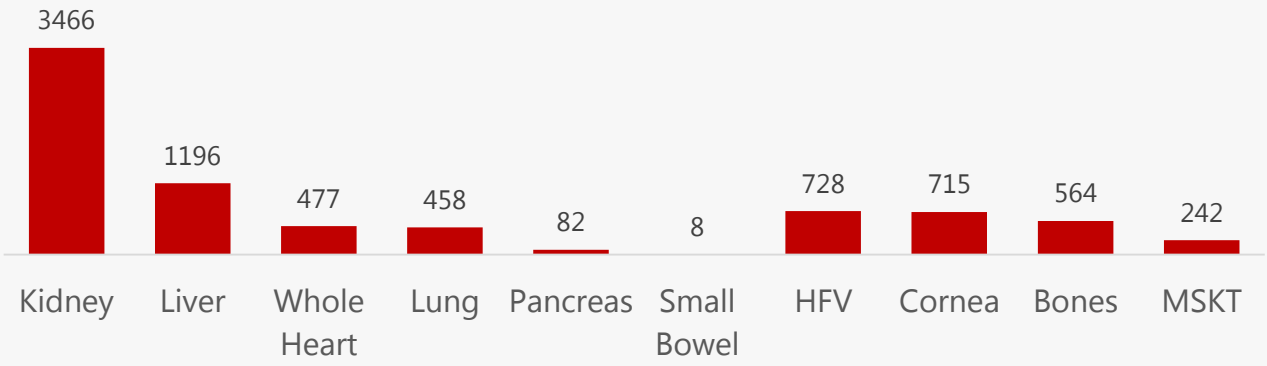


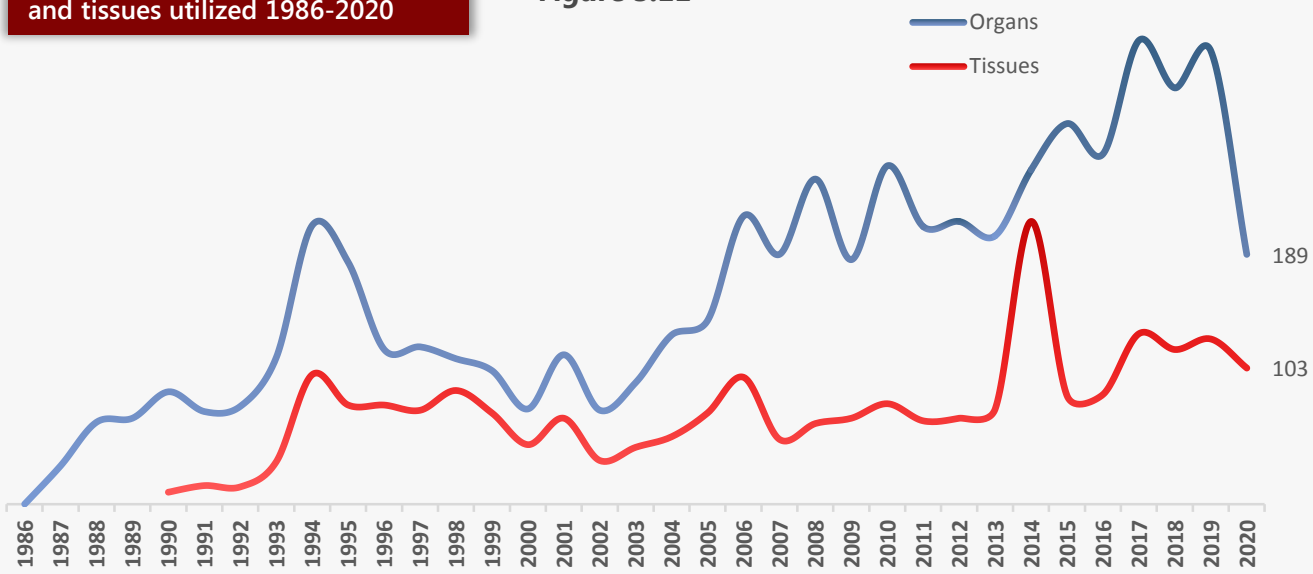
Figure 3.10

Total number of deceased organs and tissues utilized 1986-2020



Total number of deceased organs and tissues utilized 1986-2020

Figure 3.11

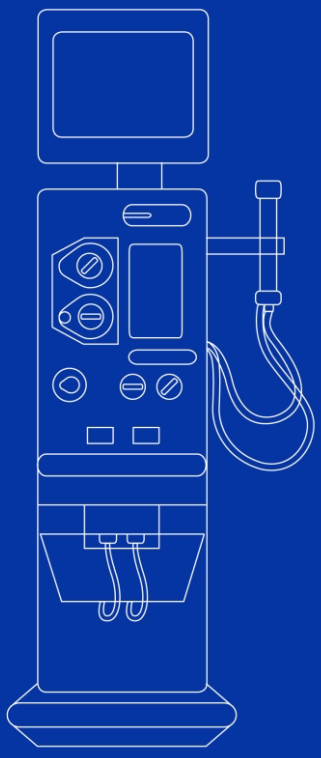


Total Organs (kidney, liver, heart, small bowel, pancreas, lung)	**5,680**
Total Tissues (corneas, heart for valves, bones, musculoskeletal tissues)	**2,248**

Statistical Summary

Hemodialysis

Hemodialysis



7,910

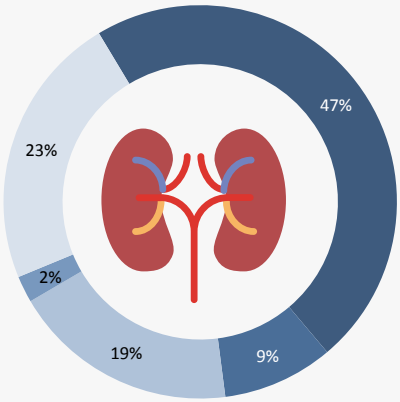
Total Number of HD Machines

19,715

Total Number of HD Patients 2020

274

Total Number of Hemodialysis Centers

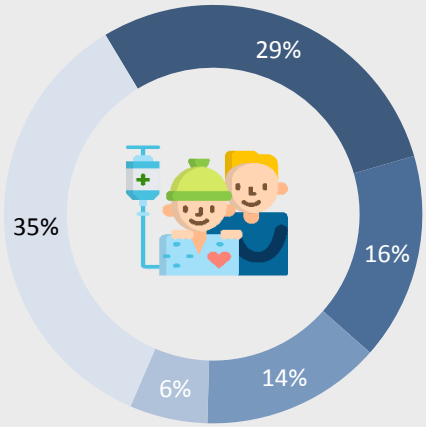


Hemodialysis Center and Affiliation 2020

- MOH **132 (48%)**
- Gov't Non-MOH **24 (9%)**
- King Abdullah Hemodialysis Projects **6 (2%)**
- Private & Charitable hospitals **54 (19%)**
- MOH Outsourcing Dialysis Program **62 (22%)**

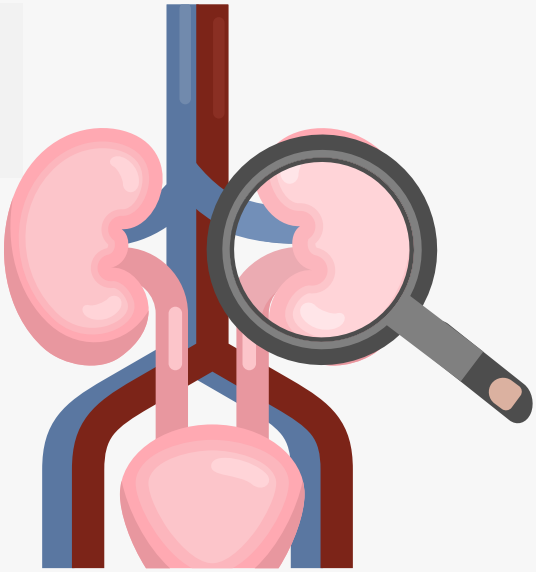
Distribution of Chronic Hemodialysis Patients by Dialysis Sector

- MOH **5,258 (27%)**
- Gov't Non-MOH **2,994 (16%)**
- Private & Charitable hospitals **2,987 (15%)**
- King Abdullah Hemodialysis Projects **1,207 (6%)**
- MOH Outsourcing Dialysis Program **7,076 (36%)**



Hemodialysis Patients

Blood Group among Chronic Hemodialysis Patients 2020



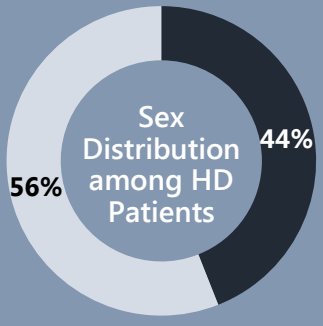
2020

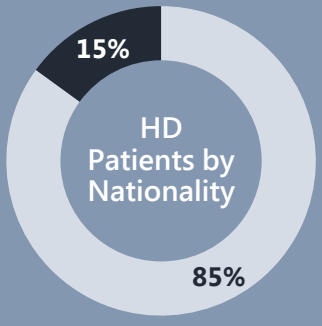
Female

8,670

Male

11,045





Saudi

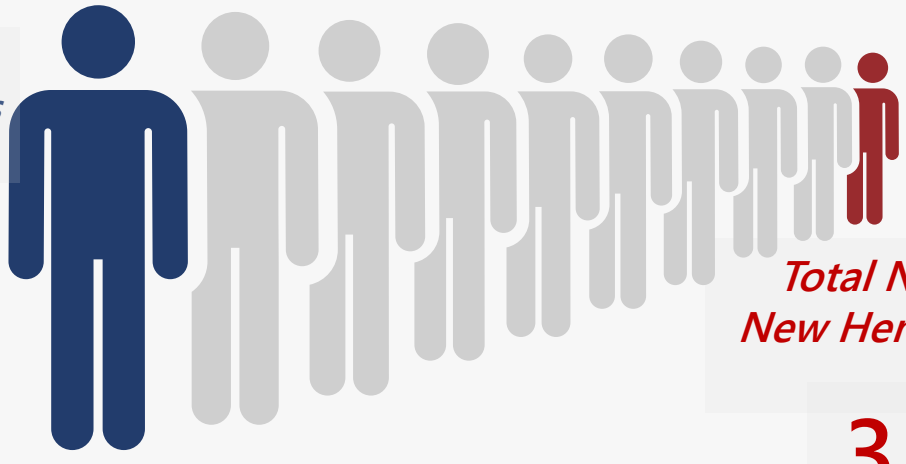
16,706

Non-Saudi

3,009

Total Number of Hemodialysis Patients

19,715



Total Number of New Hemodialysis Patients

3,926

Hemodialysis Centers & Patients in All Sectors 2020

Central Region

HD Centers
84

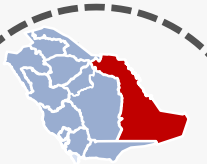
6087 Number of Patients	264 Number of Consultants & Specialists	2342 Number of Follow up Transplanted Patients
2447 Number of HD Machines	1647 Number of Nurses	1207 Number of New Patients

Western Region

HD Centers
72

6450 Number of Patients	302 Number of Consultants & Specialists	1751 Number of Follow up Transplanted Patients
2249 Number of HD Machines	1270 Number of Nurses	1275 Number of New Patients

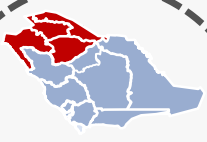
Eastern Region



HD Centers
35

2489 Number of Patients	118 Number of Consultants & Specialists	1813 Number of Follow up Transplanted Patients
1035 Number of HD Machines	660 Number of Nurses	549 Number of New Patients

Northern Region



HD Centers
31

1757 Number of Patients	55 Number of Consultants & Specialists	150 Number of Follow up Transplanted Patients
874 Number of HD Machines	388 Number of Nurses	401 Number of New Patients

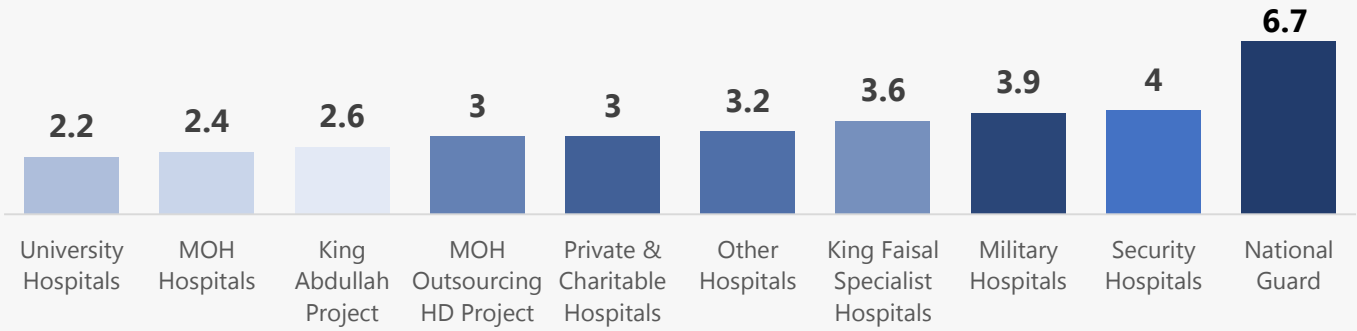
Southern Region

HD Centers
52

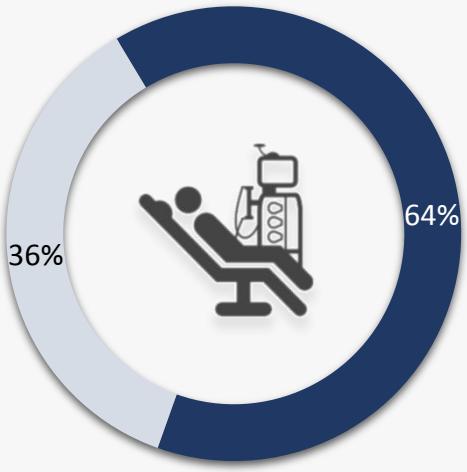
2932 Number of Patients	112 Number of Consultants & Specialists	1217 Number of Follow up Transplanted Patients
1305 Number of HD Machines	603 Number of Nurses	494 Number of New Patients

Hemodialysis in All Sectors by Regions 2020

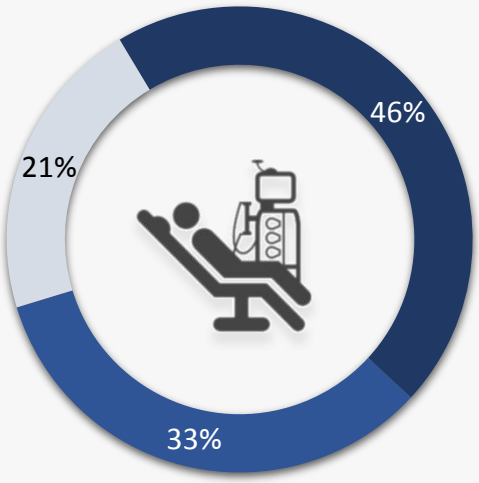
Number of HD Pts/Number of Dialysis Outlets



Number of HD pts. MOH vs. NON-MOH



Number of HD pts. In MOH hospitals per sector



Statistical Summary

Peritoneal Dialysis

Peritoneal Dialysis

Total Number of Peritoneal Dialysis Patients, 2020

1,781

Total Number of New Peritoneal Dialysis Patients, 2020

545

2020

	Number of Hospitals	Number of Adult and Paediatric Patients	
		Adult	Paediatric
Central Region	14	556	117
Western Region	11	353	59
Eastern Region	6	334	33
Northern Region	4	117	7
Southern Region	6	174	31

Foreword and Highlights

Foreword

The annual report of the Saudi Center for Organ Transplantation (SCOT) is largely based on the data collected from 2020 since the commencement of organ donation and transplantation program in the Kingdom of Saudi Arabia. The data is composed of records from SCOT and follow-up reports from the transplant programs in the Kingdom. The medical department at SCOT collated the statistics, conducted the required analyses, created figures and tables, generated the content and designed the document. The data provided via tables and figure, and each chapter contain a brief introduction highlighting the salient aspects of the data in relevant sections.

Overview and Highlights

The report includes chapters on Deceased Donors after Brain Death and Organ Donation that underline the current activities of deceased organ donation program. In addition, the hospitals' contributions to organ donation program with regional breakdown is included. The organ transplantation activities constitute of kidney, liver, heart, pancreas, lung, corneal transplantations as well as bone donations. Each section of organ transplantation activities contains data on deceased and living transplantation in currently active transplant centers and chapters on haemodialysis and peritoneal dialysis of which data was collected from all dialysis centers in the Kingdom.

Sperate indices of tables and figures presented in report are included for easy access for our data and glossary of abbreviation.

The data of this annual report will also be available on our website: www.scot.gov.sa

Deceased Donation after Brain Death in the Kingdom of Saudi Arabia

The Chapter of Deceased Donation After and Brain Death, will

- Introduce to you the SCOT's approach to deceased organ donation and the tools we used to build up the data in this annual report (e.g. The Critical Pathways of Deceased Organ Donation.
- Show the deceased donation conversion process in every steps.
- Show the deceased donor's characteristics and their demographics.
- Display the hospital activities including the GCC decease donor sharing activities and their individual contribution to deceased donation process.
- Provide the data organs of deceased organs shared via deceased organ sharing from other GCC countries.

In 2020, The Critical pathways of deceased organ donation conversion rate consist of 408 possible deceased donor, 286 potential, 230 eligible, 74 consented donors for organ donation, 65 actual donors and 63 utilized deceased donors.

Donor demographics and characteristics were recorded highlighting important data including the age, sex, and causes of death.

The success from organ recovery to transplantation involves the logistics and transportation utilized in majority of the actual DBD donor these includes the use of MEDEVAC and Ambulance services.

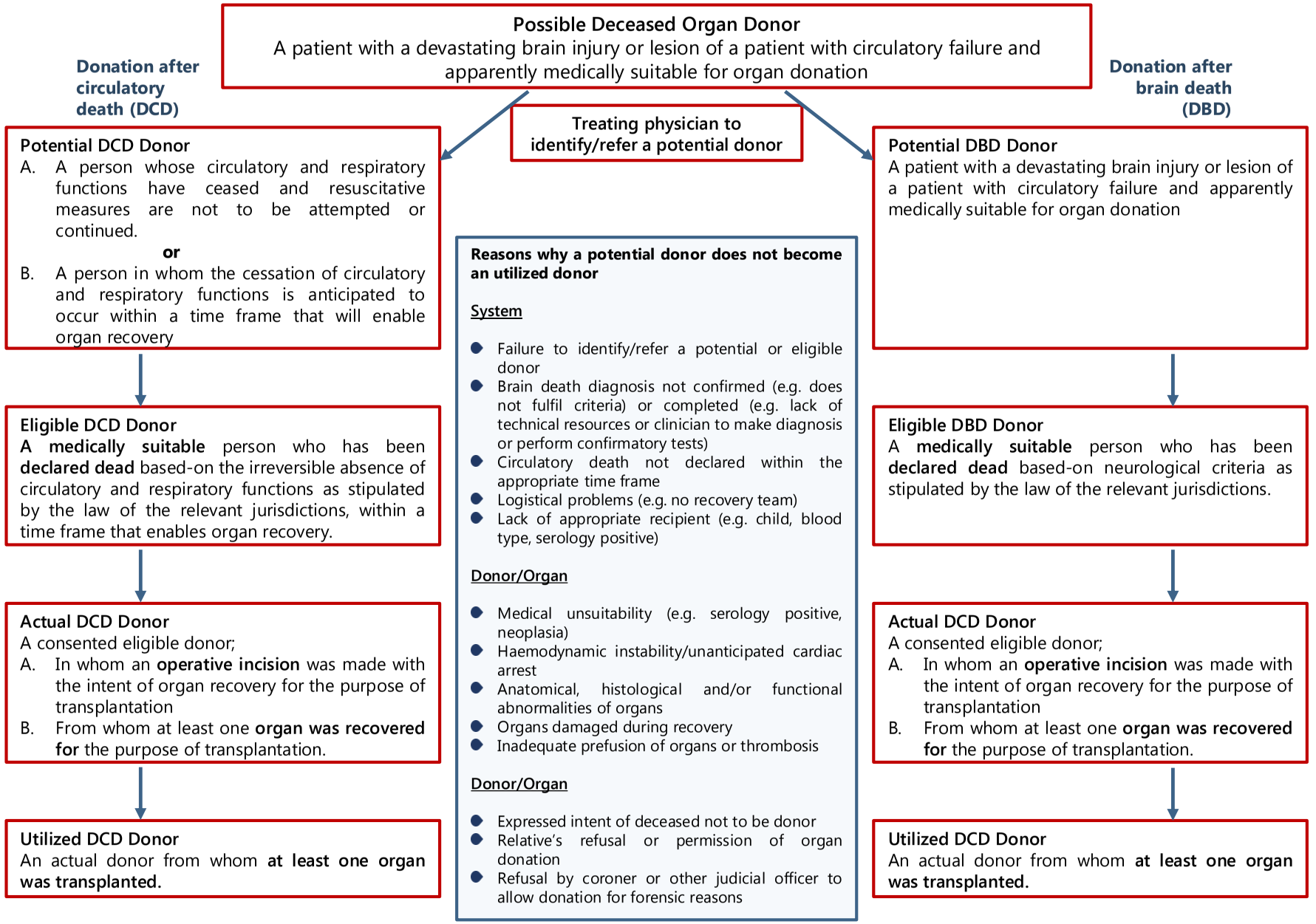
Lastly, the national program on deceased organ donation will not materialized without the hospital participation and their important contribution from reporting the possible donor, documentation of brain death to breaking the bad news to the family. Highlighted on this report were the hospitals individual contribution and the top performing hospitals activity from reporting to donor utilization.

- The Kingdom of Saudi Arabia has an active deceased donation and transplantation program under the supervision of the Saudi Center for Organ Transplantation (SCOT).
- Clear policies have been laid down to facilitate diagnosis of Death by Brain Function Criteria and the management of potential deceased donors.
- Religious scholars approved the concept of Death by Brain Function Criteria and Organ Donation.

Deceased Donation after Brain Death in the Kingdom of Saudi Arabia

Critical Pathways for Organ Donation

Figure 1.1.1 Critical pathways of deceased organ donation



*The "dead donor rule" must be respected That is, patients may only become donors after death, and the recovery of organs must not cause a donor's death

Deceased Donation after Brain Death in the Kingdom of Saudi Arabia

1.1 Possible DBD Donors

Annual Trend of Possible DBD Donors

Figure 1.1.2

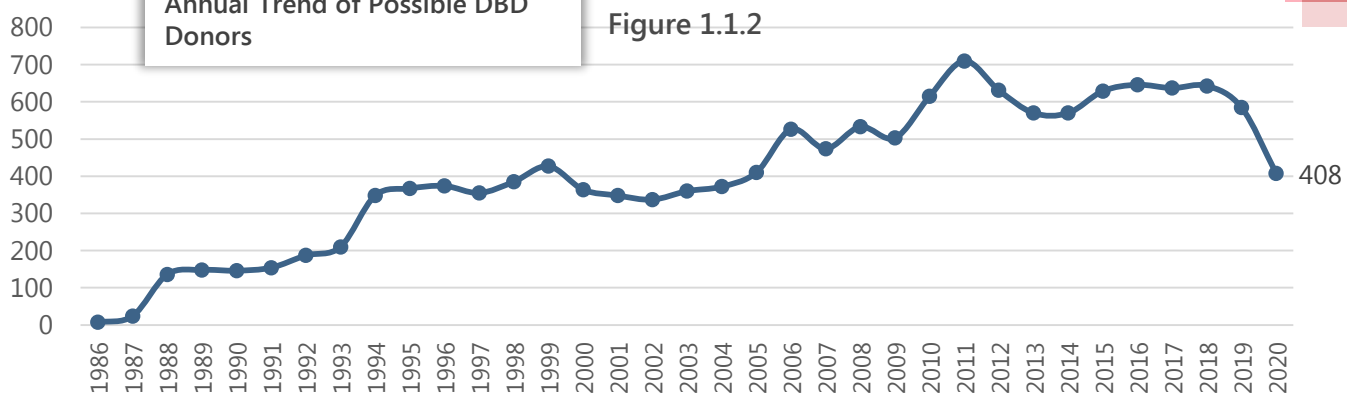
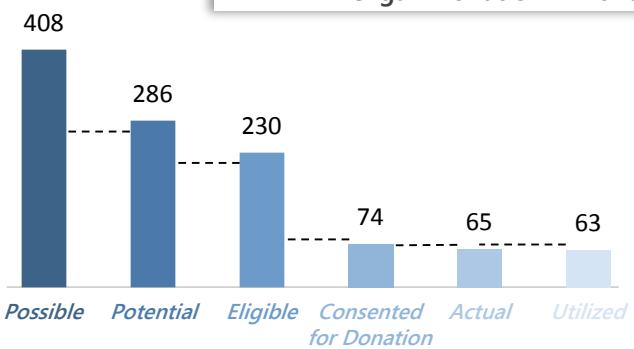


Figure 1.1.3 Critical Pathway of Deceased Organ Donation in 2020

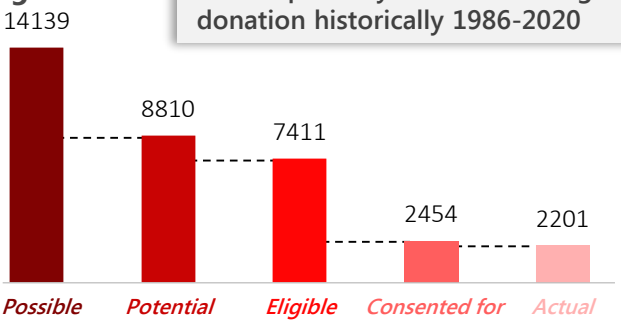


In 2020, the Critical Pathways of Deceased Organ Donation recorded 408 possible DBD donors, 286 potential, 230 eligible, 74 consents, 65 actual and 63 Utilized donors (see figure 1.3). Since 1986, the deceased donors recorded were 14,139 possible, 8,810 potential, 7,411 eligible, 2,454 consents and 2,201 actual donors (see figure 1.4).

Annual trend of possible DBD recorded the highest possible DBD donors was in 2011 with 710 donors. (See figure 1.2).

In 2020, the highest number of DBD donors recorded were from Riyadh region with 217 possible, 169 potential, 151 eligible, 45 consents, 42 actual and 42 utilized donors recognizing its highest performance region wise (see table 1.1.1).

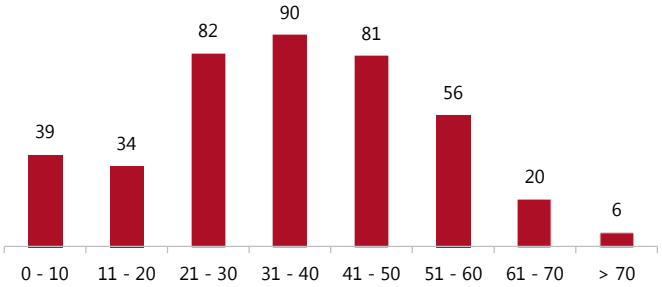
Figure 1.1.4 Critical pathway of deceased organ donation historically 1986-2020



Region	Possible	Potential	Eligible	Consented	Actual	Utilized
Central	183	150	125	33	31	30
Western	82	38	28	3	1	1
Eastern	67	56	40	10	8	8
Northern	29	8	7	4	3	3
Southern	17	5	1	0	0	0
Outside	30	29	29	24	22	21
Total	408	286	230	74	65	63
Central	183	150	125	33	31	30

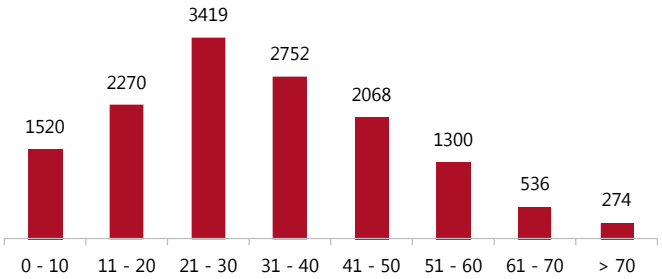
Table 1.1.1: Critical pathway of deceased organ donation, region wise in 2020

Figure 1.1.5 **Age Distribution of Possible DBD Donors in 2020**



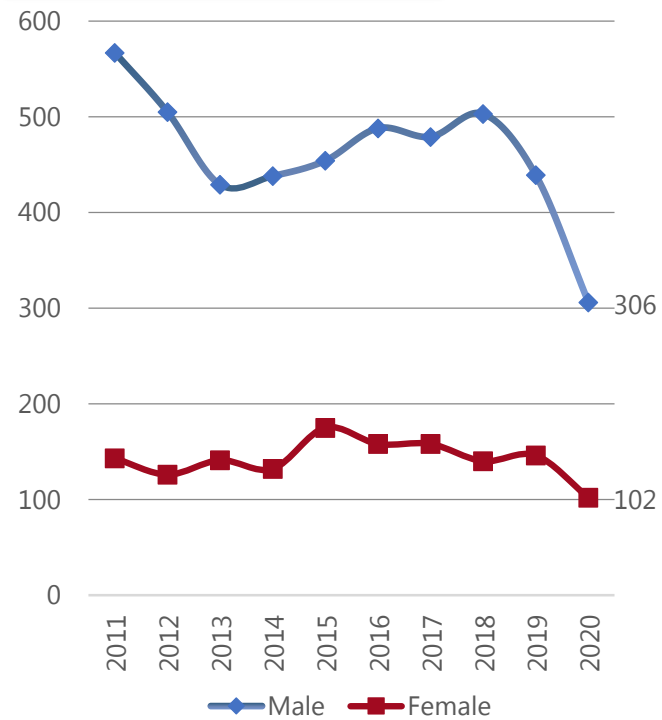
In 2020, analysis of the age distribution of the possible DBD donors shows that the majority of the DBD donors were in the age group between 21-50 yrs. composing 62% of the cases, with the highest number in age group between 31-40 yrs., having 22% of the possible DBD donors (see figure 1.1.5). Cumulatively, since 1986, the majority of possible DBD donors were mainly from age group between 21-40 years composing 44% of the cases (see figure 1.1.6).

Figure 1.1.6 **Age Distribution of Possible DBD Donors, 1986-2020**

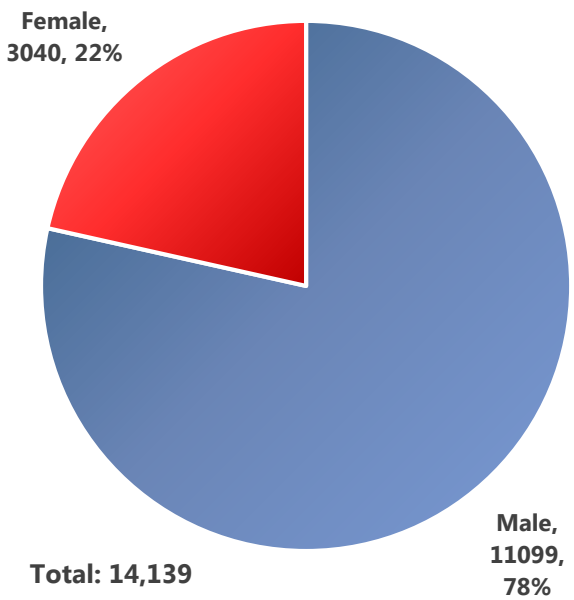


Gender analysis during the year among BD donors have shown that 75% of DBD donors were male and the remaining 25% were females having a gender ratio of 3:1. Since 1986, the males represent 79% of the possible DBD donors and females represent 21% with a male to female ratio of 4:1 (see figures 1.1.7 & 1.1.8).

Gender Distribution in Possible DBD Donors, 2000-2020 **Figure 1.1.7**



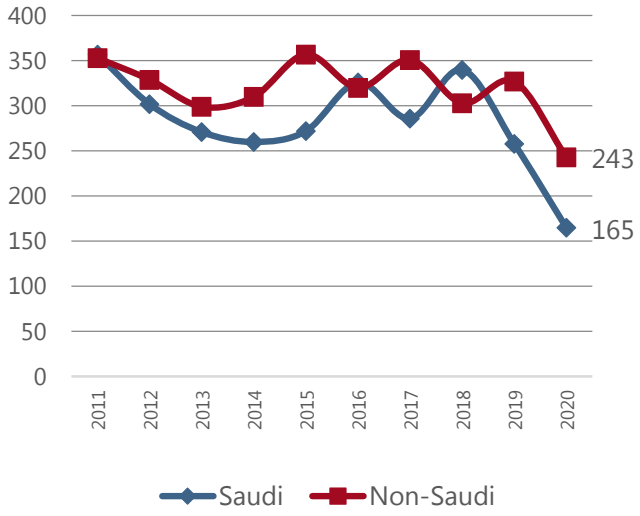
Gender Distribution in Possible DBD Donors, 1986-2020 **Figure 1.1.8**



In 2020 Nationality distribution among possible DBD donors have shown that Saudi Nationals comprises 165 (40%) of the total DBD donors while the other 243 (60%) were non-Saudis. Since 1986, Saudi's comprises 53% of the possible DBD donors and non-Saudis with 47% of the total DBD donors (see figures 1.1.9 and 1.1.10).

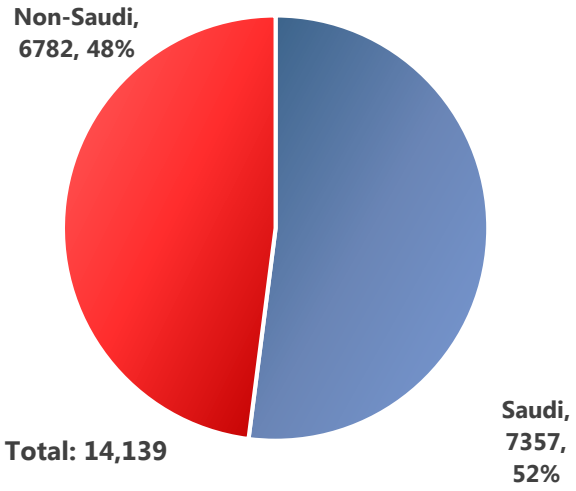
Nationality Distribution in Possible DBD Donors, 2000-2020

Figure 1.1.9



Nationality Distribution in Possible DBD Donors, 1986-2020

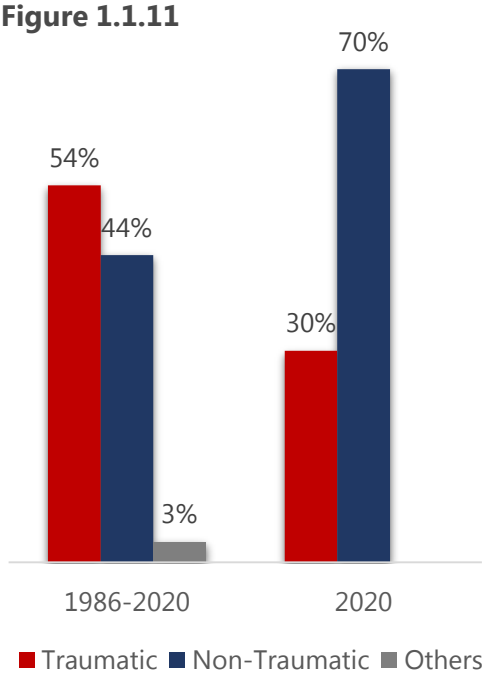
Figure 1.1.10



Analysis of the causes of death among possible DBD donors in 2020 shows that traumatic cause of death were (30%) and death from non-traumatic causes were (70%). Majority of the traumatic causes were due to Motor Vehicle Accident (MVA) 74% while non-traumatic causes were mainly due to Cerebrovascular Accident (CVA) 67% (See table 1.1.2).

Historical Comparison of Cause of Death among Possible DBD Donors

Figure 1.1.11



Cause of Death	Number	
	1986-2020	2020
Traumatic	**7,403**	**121**
• MVA	6031	90
• FFH	844	19
• DHT	380	5
• Gunshot	146	7
• Electric Shock	2	-
Non-Traumatic	**6,330**	**287**
• CVA	4246	193
• Anoxia	1577	87
• CNS Tumor	507	7
Others	**406**	**0**
Total	**14,139**	**408**

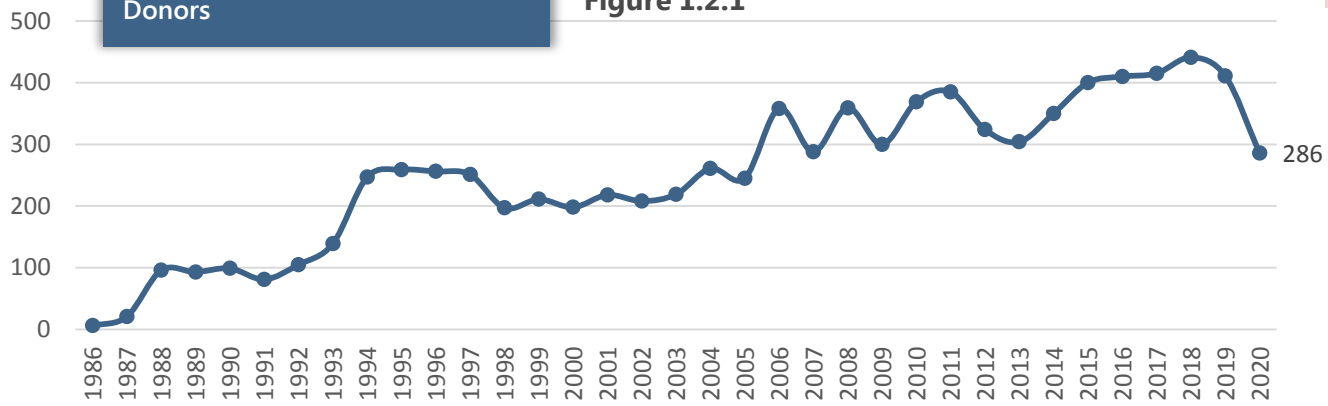
Table 1.1.2: Cause of death among possible DBD donors in 1986-2020 and 2020

Deceased Donation after Brain Death in the Kingdom of Saudi Arabia

1.2 Potential DBD Donors

Annual Trend of Potential DBD Donors

Figure 1.2.1



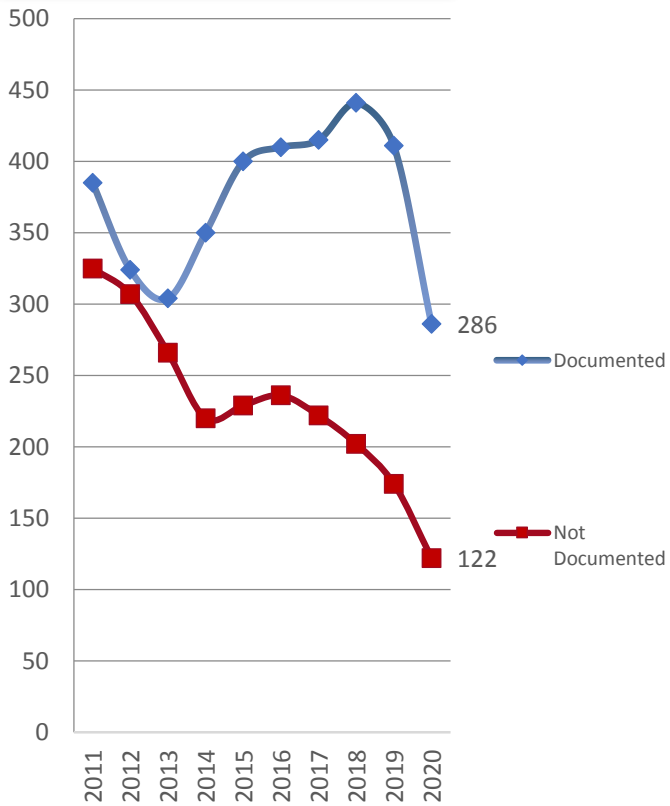
1.2 Potential DBD Donors

In 2020, there were 286 potential DBD donors and the annual trend of potential DBD donors since 1986 has shown a total of 8,810 potential DBD donors reported to SCOT. (See figure 1.2.1).

The 286 potential DBD donors were fully documented based on the Saudi National Protocol for Diagnosis of Death by Brain Function Criteria and had shown a decrease since the previous year due to the occurrence of a global pandemic and on the contrary, non-documented cases continued to show a decreasing pattern since 2012 (see figure 1.2.2 & 1.2.3 cumulative).

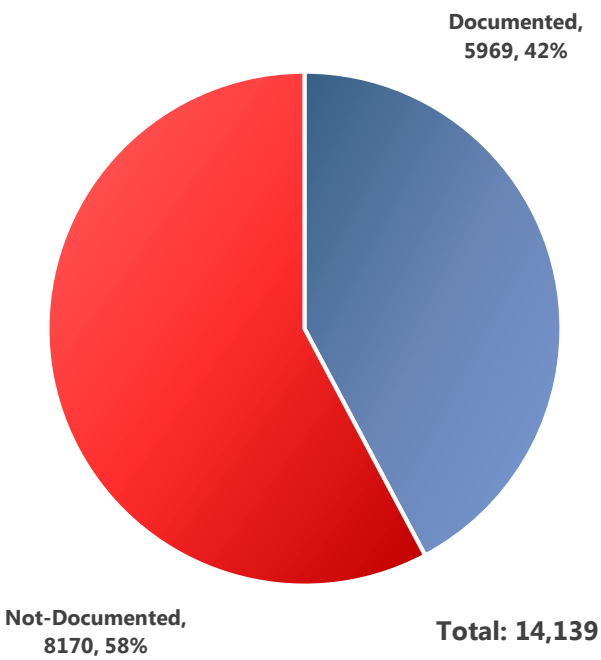
Documented and Undocumented Possible DBD Donors

Figure 1.2.2



Documented and Undocumented Possible DBD Donors (1986-2020)

Figure 1.2.3

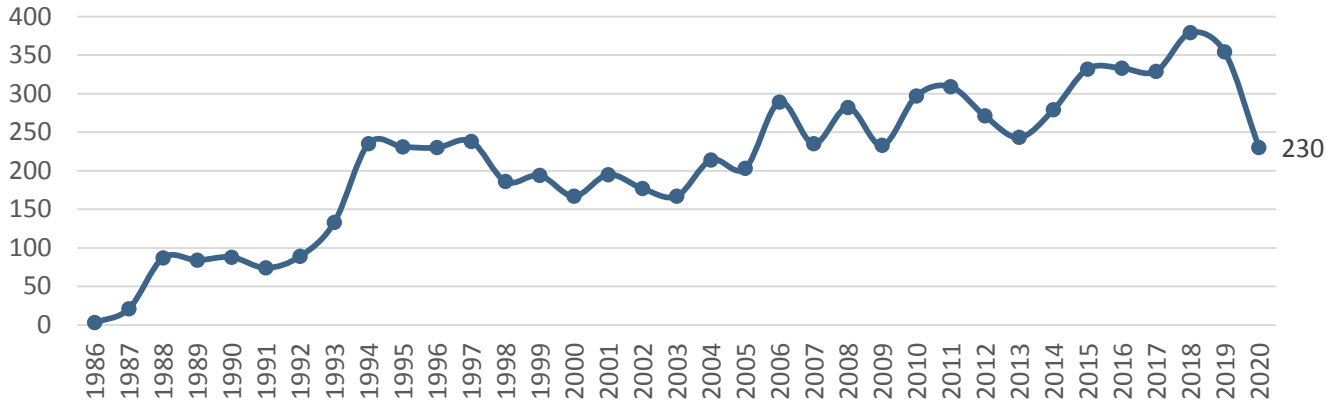


Deceased Donation after Brain Death in the Kingdom of Saudi Arabia

1.3 Eligible to Consented DBD Donors

Annual Trend of Approached Eligible DBD Donors

Figure 1.3.1

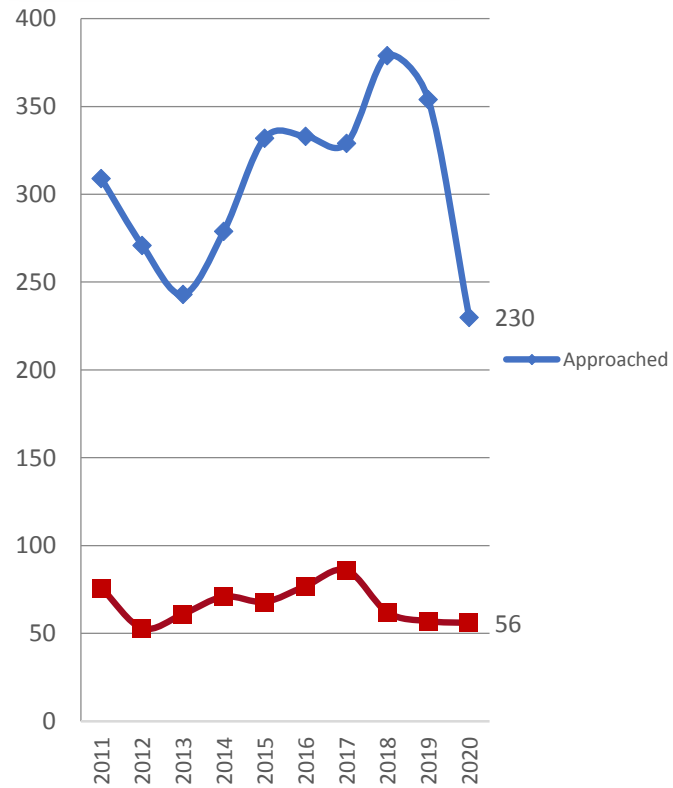


1.3 Eligible DBD Donors

In 2020, there were 230 eligible DBD donors wherein the donors next of kin was approached for organ donation and since 1986, a total of 7,411 eligible DBD donor's kin were approached by SCOT (see figure 1.3.1). Approached and not approached families of DBD donors for organ donation were also documented yearly and cumulatively from 1986. In addition, the number of eligible donors or family approached for organ donation has slightly improved yielding 84% of the donor's conversion from potential to eligible donors. (See figure 1.3.2 & 1.3.3).

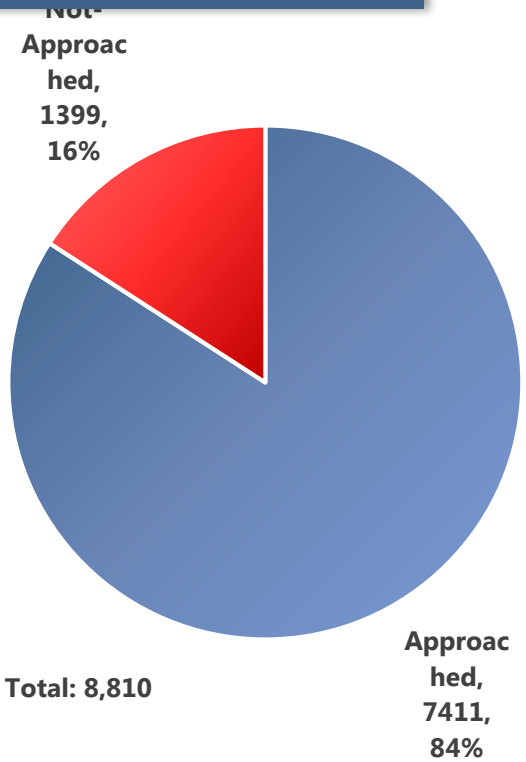
Approached and Not-Approached Eligible DBD Donors

Figure 1.3.2



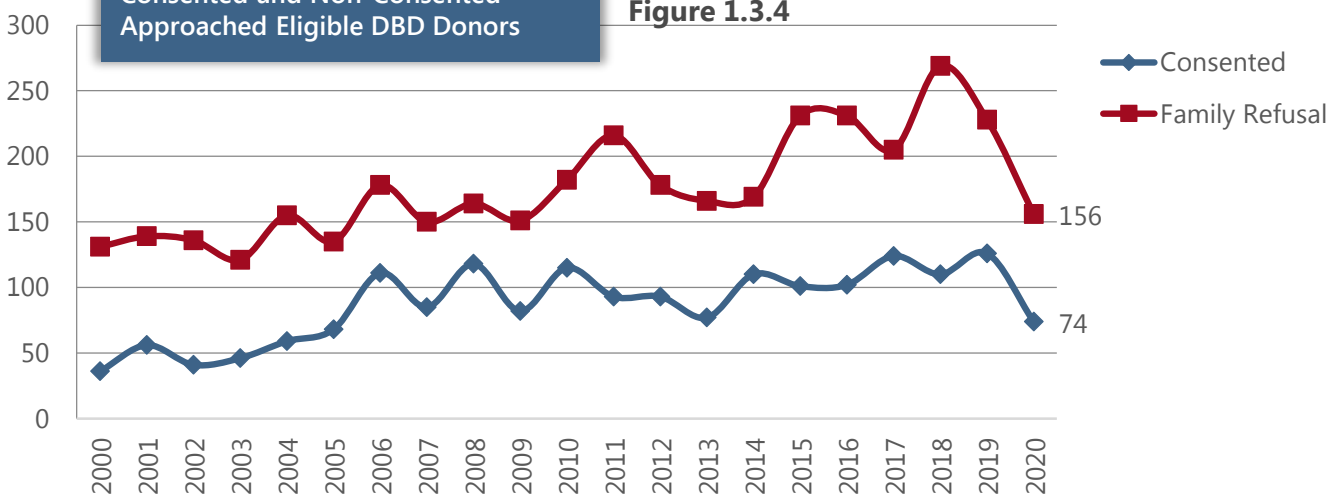
Approached and Not-Approached Eligible DBD Donors (1986-2019)

Figure 1.3.3



Consented and Non-Consented Approached Eligible DBD Donors

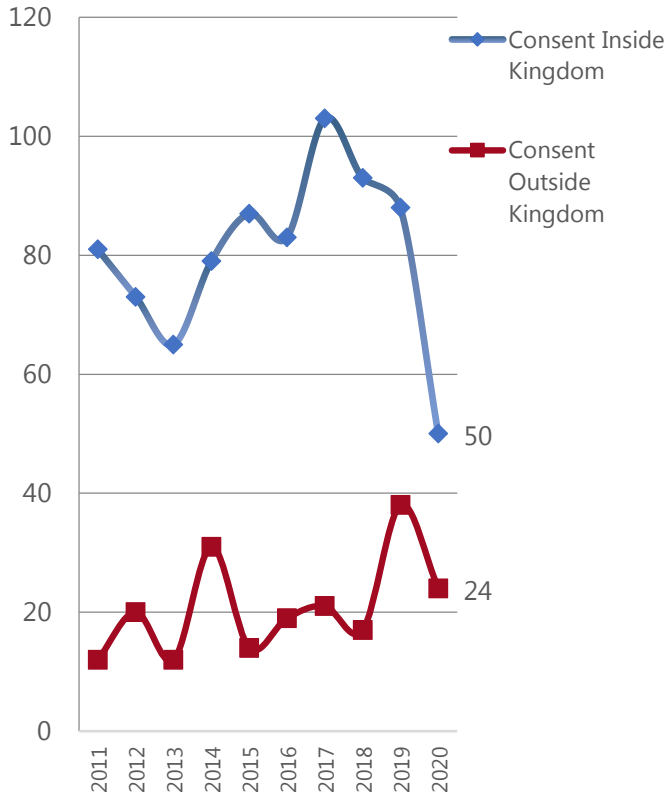
Figure 1.3.4



In 2020, there were a total of 74 (32%) consented cases for organ and tissue donation of the 230 approached eligible DBD donors the highest recorded consent DBD donors over the last 20 years. (see figure 1.3.5 & 1.3.6 cumulatively). The trend of consented eligible DBD donors including the consents from outside the Kingdom of Saudi Arabia in 1997-2020 is shown in (figure 1.3.4).

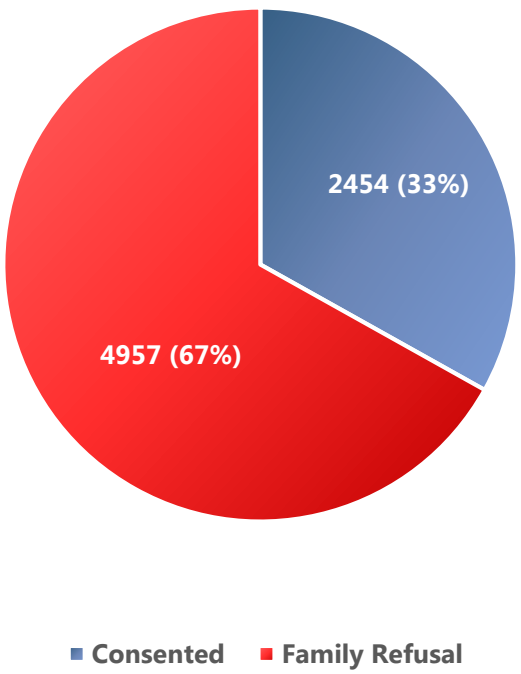
Annual Trend of Consented Eligible DBD Donors

Figure 1.3.5



Consented and Non-Consented Approached Eligible DBD Donors (1986-2020)

Figure 1.3.6

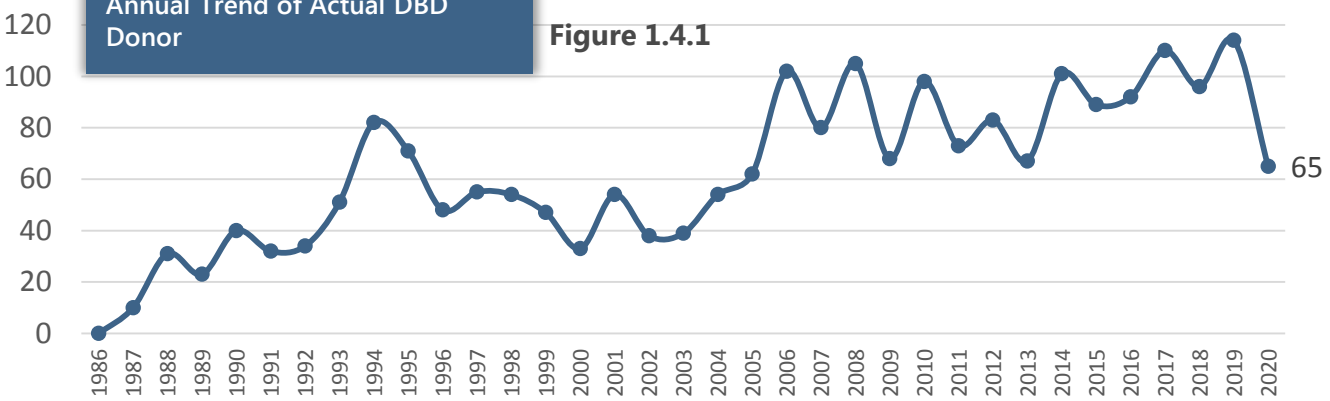


Deceased Donation after Brain Death in the Kingdom of Saudi Arabia

1.4 Actual DBD Donors

Annual Trend of Actual DBD Donor

Figure 1.4.1

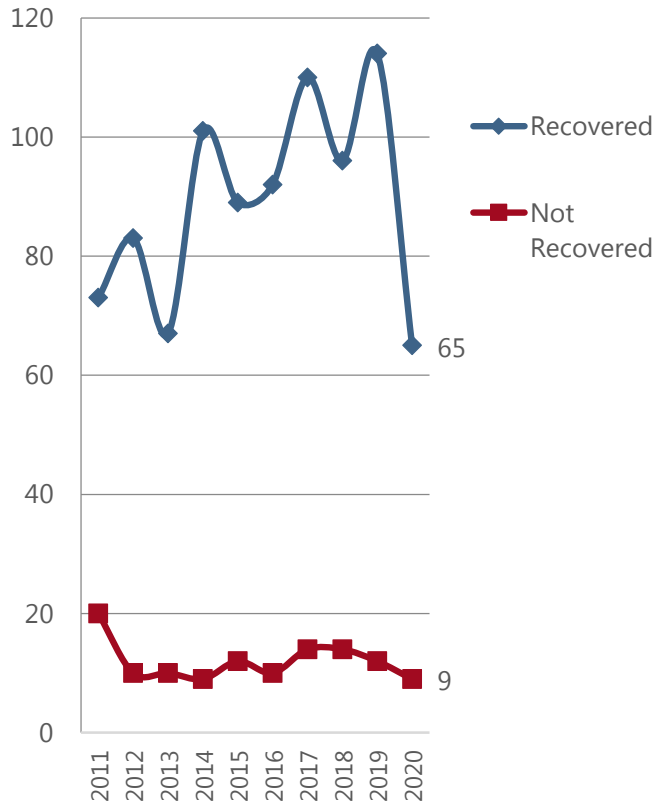


1.4 Actual DBD Donors

In 2020, 74 deceased eligible donors were consented for organ donation wherein, 65 (88%) were converted to actual DBD donors and 9 non-recovered donors (figure 1.4.2). Since 1986, a total of 2,201 consented eligible DBD donors were recovered and 253 donors were non-recovered (figure 1.4.3). The annual trend of actual DBD donors is shown in (figure 1.4.1).

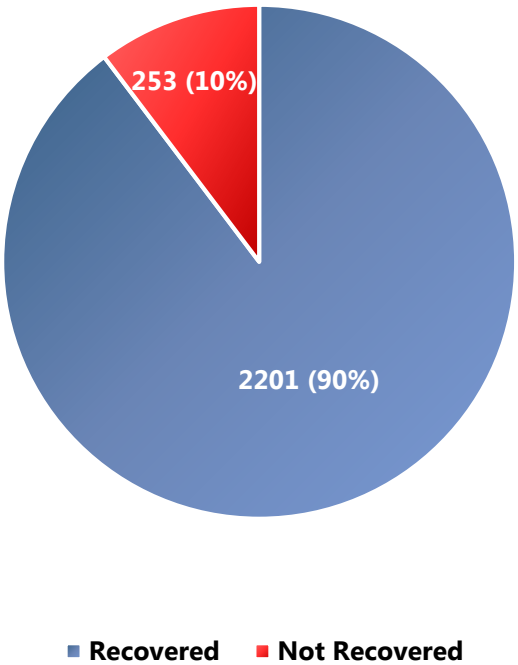
Recovered and Non-Recovered Consented Eligible DBD Donor

Figure 1.4.2



Recovered and Non-Recovered Consented Eligible DBD Donor (1986-2020)

Figure 1.4.3



Deceased Donation after Brain Death in the Kingdom of Saudi Arabia

1.5 Utilized DBD Donors

1.5 Utilized DBD Donor

From the 65 actual DBD donors; 63 donors were utilized; wherein, 42 donors where utilized from inside the KSA including 21 deceased were donors from shared GCC countries. Actual Non-utilized donors is 1 from GCC (U.A.E.) and 1 from Qassim Region, details of the not utilized actual DBD donors are listed in table 1.5.1. There was an increased in utilized deceased cases compared to last year.(see figure 1.5.1).

Reasons	Number	%
Intraoperative		
Male/44 yrs. old/CVA; high risk for malignancy	1	50
Male/49 yrs. old/CVA; arterial anatomy with pancreatitis	1	50

Table 1.5.1: Reasons for not utilized actual DBD Donors 2020

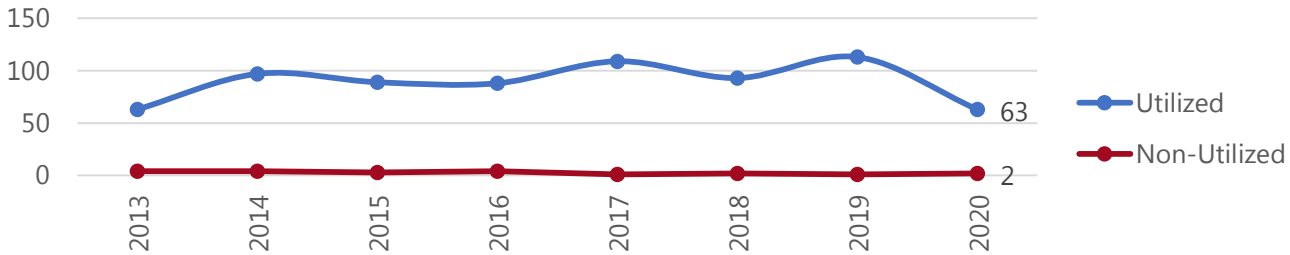


Figure 1.5.1 Utilized and Non-Utilized DBD Donors 2013-2020

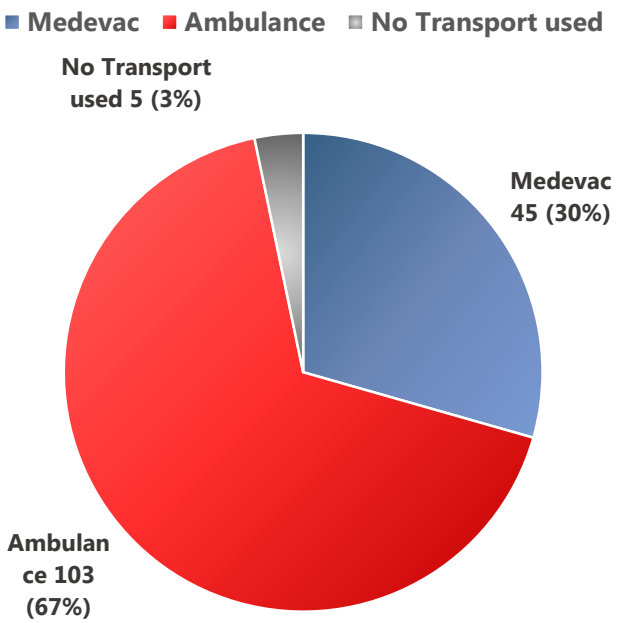
Utilized and Non-Utilized Actual DBD Donors 2020

In 2020, utilized organ donors were as follows : Kidney 72, liver in 51, heart 28, pancreas 2, lungs 35 and small bowel 1 donor.

1.5.1 Logistics

Transportation and logistics plays an important role in the success of organ donation program. Ambulances and Medevacs were used to transport personnel and organs in and out of the Kingdom. In 2020, 45 medevac flights were used in 33 consented cases. 103 ambulance transports in 61 cases and 5 case, the donor was in transplant center. (see figure 1.5.2 for transportation used during organ recovery).

Figure 1.5.2: Logistics used in actual deceased donors in 2020



1.6 Key Performance Indicators

The ministry of Health (MOH) is keen on the quality of health service provided and started an initiative to measure the key performance indicator (KPI) among health practices in the Kingdom. SCOT managed to include the deceased organ donation process into this initiative and had a list of quality criteria and KPI which will allow identifying rooms for improvement to maximize the deceased organ donation process overall.

The quality indicators are the following :

1. Identification and Reporting of Possible Deceased Donors

- Donor Medical Coordinator should notify all comatose patients with devastating brain injury on mechanical ventilation admitted to ICU apparently suitable for organ donation to Saudi Center for organ transplantation (SCOT)

- **Key Performance Indicator (KPI):** Number of comatose patients with devastating brain injury on mechanical ventilation admitted to ICU who are referred to SCOT **/** Number of comatose patients with devastating brain injury on mechanical ventilation admitted to ICU should be at least **75%**

- Donor Medical Coordinator should refer to the Directory of regulation of organ transplantation in kingdom of Saudi Arabia on the referral criteria and clinical triggers.

2. Death Declaration by neurological Criteria:

1.1. Number of Death Declaration by neurological Criteria:

- Donor Medical Coordinator should follow Death declaration by neurological criteria according to Saudi national protocol for referred possible donors to SCOT

- **Key Performance Indicator (KPI)**: Number of patients declared dead by neurological criteria according to Saudi national protocol/Number of patients referred as possible donors to SCOT should be at least **75**%.

- Donor Medical Coordinator should refer to Directory of regulation of organ transplantation in kingdom of Saudi Arabia on the Saudi national protocol for death declaration by neurological criteria.

1.2. Time of Death Declaration by neurological Criteria

- **Key Performance Indicator (KPI)**: Patients referred as possible donors to SCOT should be declared dead by neurological criteria according to Saudi national protocol within **24** hours from time of referral.

1.3 Post Death Declaration (Breaking bad news)

- **Key Performance Indicator (KPI)**: Families of patients declared dead by neurological criteria according to Saudi national protocol should be informed about death of their relatives within **12** hours from time of death declaration.

3. Management and maintenance of Deceased Organ donor

3.1 Management Protocol

- **Key Performance Indicator (KPI): All** Hospitals should **apply** the Saudi national protocol for management and maintenance of deceased organ donor to all Patients referred as possible donors to SCOT during the whole hospital / ICU stay

3.2 Unexpected Cardiac Arrest

- **Key Performance Indicator (KPI)**: Number of Patients referred as possible donors to SCOT who suffered unanticipated cardiac arrest / Number of Patients referred, as possible donors to SCOT during the whole hospital/ ICU stay should be maximum **5**% if applicable.

- Unanticipated cardiac arrest is cardiac arrest that occurs from the moment at which brain death is suspected or afterwards and that is not attributable to multi-organ failure / sepsis.

4. Family Approach

- Donor Administrative Coordinator should interview Families of patients declared dead by neurological criteria according to Saudi national protocol

- **Key Performance Indicator (KPI)** : Number of patients' families declared dead by neurological criteria according to Saudi national protocol who were interviewed by DAC for organ donation within **12** hours from breaking bad news **/** Number of patients declared dead by neurological criteria according to Saudi national protocol should be at least **90** %

- Donor Administrative Coordinator should refer to Directory of regulation of organ transplantation in kingdom of Saudi Arabia on family approach for organ donation.

5. Consent

- Donor Administrative Coordinator should follow the process of obtaining written consent from next of kin.

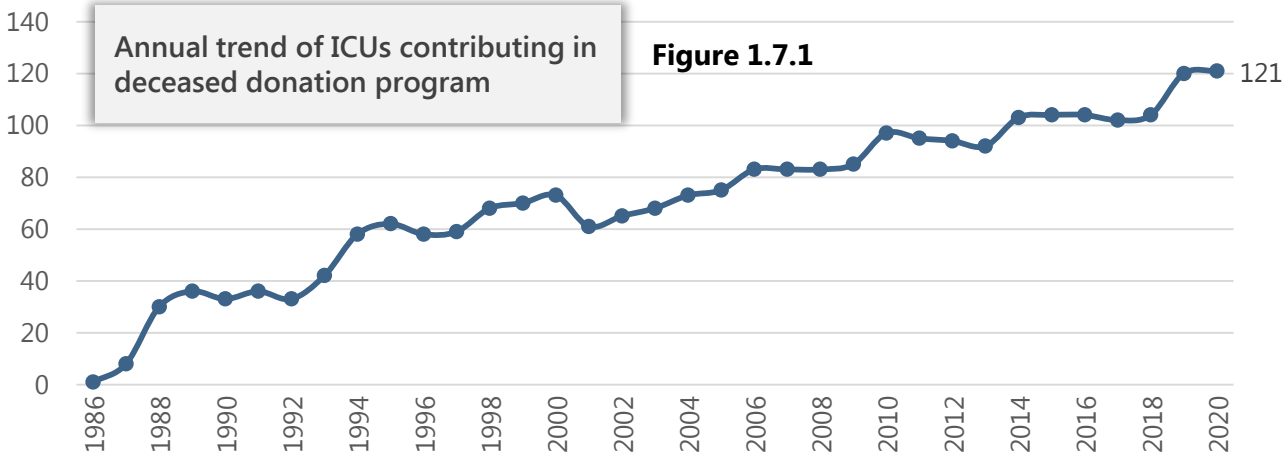
- **Key Performance Indicator (KPI):** Number of no opposition / Number of families interviewed should be at least **50** %.

- Donor Administrative Coordinator should refer to Directory of regulation of organ transplantation in kingdom of Saudi Arabia on getting consent for organ donation.

Hospital Contribution in Organ Donation Program

Annual trend of ICUs contributing in deceased donation program

Figure 1.7.1



In 2020, 120 ICU's reported possible DBD donors to Saudi Center for Organ Transplantation (SCOT). Over the years, there was an increase in the number of ICUs contributing to this program.

These ICU's were divided into three categories; large (>20 ICU beds), medium (10-20 ICU beds) and small (<10 ICU beds). The top 3 hospital with the most consented cases are mentioned below with their corresponding ICU beds.

Total Number of DBD Donor for All Type Hospitals

Table 1.7.1

Hospital Category	Possible	Potential	Eligible	Consented	Actual	Utilized
Greater than 20 ICU Beds	235	165	128	30	25	25
10 - 20 ICU Beds	84	51	38	11	10	9
Less than 10 ICU Beds	59	41	35	9	8	8
Outside KSA	30	29	29	24	22	21
TOTAL	**408**	**286**	**230**	**74**	**65**	**63**

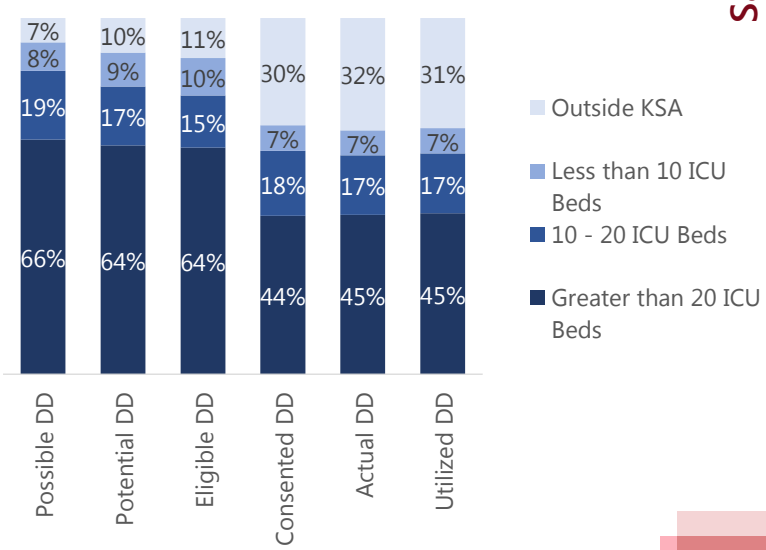
Hospitals with >20 beds (45) reported 235 cases (56% of the total), of which 165 (58%) were fully documented, 30 (40.5%) were consented for donation.

In this group, The King Saud Medical Complex, which have been a consistent top contributing hospital in deceased organ donation, contributing 60 possible, 53 potential (documented) and 14 consented-utilized donors. This was followed by King Abdulaziz Medical City National Guard Riyadh with 30 possible, 27 potential, 5 consented-utilized donors.

Dammam Medical Complex with 24 possible, 18 potential 5 consents and 4 utilized donors.

Deceased Organ Donation by Hospital ICU Capacity

Figure 1.7.2



In 2020, from this category of hospital ICU's having more than 20 beds capacity contributed 235 possible donors, documented (potential) 165 donors and utilized 25 organ donors. The top 5 reporting hospitals were the King Saud Medical City Riyadh with 60 possible donors, documented (potential) 53 donors and utilized 14 organ donors, followed by King Abdulaziz Medical City National Guard Riyadh with 30, 27 and 5; Al Noor Specialist Hospital Makkah 17, 7 but had no consented donors, King Khalid Hospital Hail with 15, 3 and but no consent as well and Dammam Medical Complex with 10, 6 and no consents.

Table 1.7.2 **Hospitals with ICU's Having More than 20 Beds**

No.	HOSPITAL NAME	POSSIBLE	POTENTIAL	ELIGIBLE	CONSENTED	ACTUAL	UTILIZED
1	KING SAUD MEDICAL CITY RIYADH	60	53	45	14	14	14
2	KING ABDULAZIZ MEDICAL CITY NATIONAL GUARD RIYADH	30	27	18	5	5	5
3	AL NOOR SPECIALIST HOSPITAL MAKKAH	17	7	5	0	0	0
4	KING KHALID HOSPITAL HAIL	15	3	3	1	0	0
5	DAMMAM MEDICAL COMPLEX	10	6	3	1	0	0
6	KING ABDULAZIZ HOSPITAL JEDDAH	8	2	2	0	0	0
7	KING SALMAN HOSPITAL RIYADH	7	6	5	0	0	0
8	KING KHALID UNIVERSITY HOSPITAL RIYADH	6	6	6	1	1	1
9	KING ABDULAZIZ MEDICAL CITY NATIONAL GUARD JEDDAH	6	4	3	1	0	0
10	PRINCE SULTAN MILITARY MEDICAL CITY	5	4	3	0	0	0
11	KING FAHAD HOSPITAL JEDDAH	6	2	1	0	0	0
12	KING FAHAD UNIVERSITY HOSPITAL AL KHOBAR	4	4	1	0	0	0
13	CARE NATIONAL HOSPITAL	4	3	3	1	0	0
14	PRINCE MOHAMMED BIN ABDULAZIZ HOSPITAL RIYADH	4	3	2	0	0	0
15	MATERNITY AND CHILDREN HOSPITAL MAKKAH	4	2	2	0	0	0
16	SANAD HOSPITAL RIYADH	3	3	3	1	0	0
17	KING FAHAD MEDICAL CITY RIYADH	3	3	3	0	0	0
18	PRINCE ABDULAZIZ BIN MUSAAD HOSPITAL AR AR	3	3	2	2	2	2
19	AL HAMADI HOSPITAL AL NUZHA	3	2	1	0	0	0
20	KING ABDULAZIZ SPECIALIST HOSPITAL AL JOUF	3	0	0	0	0	0
21	AL MOWASAT HOSPITAL RIYADH	2	2	2	1	1	1
22	SECURITY FORCES HOSPITAL RIYADH	2	2	2	0	0	0

Table 1.7.2 Hospitals with ICU's Having More than 20 Beds (Continuation)

No.	HOSPITAL NAME	POSSIBLE	POTENTIAL	ELIGIBLE	CONSENTED	ACTUAL	UTILIZED
23	DR. SULAIMAN AL HABIB HOSPITAL AL RAYAN	2	2	2	0	0	0
24	KING FAHAD ARMED FORCES HOSPITAL JEDDAH	2	2	1	0	0	0
25	AL RASS GENERAL HOSPITAL	2	2	1	0	0	0
26	KING SALMAN MILITARY HOSPITAL TABUK	2	1	1	1	1	1
27	DR. SULAIMAN AL HABIB HOSPITAL TAKHASSUSSI	2	1	1	0	0	0
28	KING FAHAD HOSPITAL MADINAH	2	0	0	0	0	0
29	ABHA PRIVATE HOSPITAL	2	0	0	0	0	0
30	AL MOOSA HOSPITAL HOFUF	1	1	1	1	1	1
31	KING SAUD HOSPITAL UNAIZA	1	1	1	0	0	0
32	SAUDI GERMAN HOSPITAL DAMMAM	1	1	1	0	0	0
33	MATERNITY AND CHILDREN'S HOSPITAL JEDDAH	1	1	1	0	0	0
34	DR. SULAIMAN AL HABIB HOSPITAL AL KHOBAR	1	1	1	0	0	0
35	DR. ERFAN AND BAGEDO GNERAL HOSPITAL JEDDAH	1	1	1	0	0	0
36	DR. SULAIMAN AL HABIB HOSPITAL AL QASSIM	1	1	1	0	0	0
37	KING FAHAD HOSPITAL AL BAHA	1	1	0	0	0	0
38	KING ABDULAZIZ UNIVERSITY HOSPITAL JEDDAH	1	1	0	0	0	0
39	KING ABDULLAH MEDICAL CITY MAKKAH	1	1	0	0	0	0
40	IMAM ABDULRAHMAN AL FAISAL HOSPITAL RIYADH	1	0	0	0	0	0
41	OHUD GENERAL HOSPITAL MADINA	1	0	0	0	0	0
42	KING FAISAL HOSPITAL TAIF	1	0	0	0	0	0
43	HERAA GENERAL HOSPITAL	1	0	0	0	0	0
44	KING FAISAL SPECIALIST HOSPITAL JEDDAH	1	0	0	0	0	0
45	MATERNITY AND CHILDREN'S HOSPITAL MADINAH	1	0	0	0	0	0
	TOTAL	**235 (56%)[1]**	**165**	**128**	**30 (40.5%)[2]**	**25**	**25**

[1]Percentage from total possible donors
[2]Percentage from total consented donors

From of mid-sized hospital ICU's having more than 10-20 beds capacity contributed 84 possible donors, documented (potential) 51 donors and utilized 9 organ donors. , the top 5 reporting hospitals were the King Fahd Specialist Hospital Qassim with 9 possible donors, documented (potential) 5 donors but none were utilized organ donors, King fahd Hospital Makkah with 6 possible donors, documented (potential) 5 donors but none were utilized organ donors, King Khalid General Hospital Najran with 6, 1 and 0, Al Mana General Hospital Dammam 5, 5 and 1, King Abdullah Hospital Bisha 5, 3 and 0. In addition, recognizing Maternity Children's Hospital Buraida with most number of utilized donors in these category.

Table 1.7.3 Hospitals with ICU's Having 10 to 20 Beds

No.	HOSPITAL NAME	POSSIBLE	POTENTIAL	ELIGIBLE	CONSENTED	ACTUAL	UTILIZED
1	KING FAHAD SPECIALIST HOSPITAL QASSIM	9	5	4	1	1	0
2	KING FAISAL HOSPITAL MAKKAH	6	5	3	0	0	0
3	KING KHALID GENERAL HOSPITAL NAJRAN	6	1	0	0	0	0
4	AL MANA GENERAL HOSPITAL DAMMAM	5	5	3	1	1	1
5	KING ABDULLAH HOSPITAL BISHA	5	3	1	0	0	0
6	EAST JEDDAH HOSPITAL	5	2	2	1	0	0
7	MATERNITY AND CHILDREN HOSPITAL BURAIDA	4	4	4	2	2	2
8	KING ABDULLAH MEDICAL COMPLEX JEDDAH	4	3	3	1	1	1
9	KING FAHAD HOSPITAL HOFUF	3	3	3	1	1	1
10	AL MANA GENERAL HOSPITAL AL KHOBAR	3	3	2	0	0	0
11	AL IMAN GENERAL HOSPITAL RIYADH	3	2	2	1	1	1
12	KING KHALID HOSPITAL AL KHARJ	3	1	1	1	1	1
13	KING KHALID HOSPITAL TABUK	3	1	1	0	0	0
14	KING ABDULAZIZ HOSPITAL MAKKAH	3	1	1	0	0	0
15	SAUDI GERMAN HOSPITAL RIYADH	2	2	1	1	1	1
16	BUGSHAN HOSPITAL JEDDAH	2	2	2	0	0	0
17	DR. SULAIMAN AL HABIB HOSPITAL AL SWEIDI	2	2	1	0	0	0
18	SECURITY FORCES HOSPITAL DAMMAM	2	1	1	0	0	0
19	KING FAHD HOSPITAL TABUK	2	0	0	0	0	0
20	KING KHALID HOSPITAL MAJMAAH	2	0	0	0	0	0
21	AL MIDHNAB GENERAL HOSPITAL	2	0	0	0	0	0
22	BURAIDA CENTRAL HOSPITAL	1	1	1	1	1	1

Table 1.7.3 Hospitals with ICU's Having 10 to 20 Beds (Continuation)

No.	HOSPITAL NAME	POSSIBLE	POTENTIAL	ELIGIBLE	CONSENTED	ACTUAL	UTILIZED
23	AL SADIQ HOSPITAL QATEEF	1	1	1	0	0	0
24	KING FAHD MILITARY MEDICAL COMPLEX DAHRAN	1	1	1	0	0	0
25	KING FAHAD SPECIALIST HOSPITAL DAMMAM	1	1	0	0	0	0
26	HAFAR AL BATIN GENERAL HOSPITAL	1	1	0	0	0	0
27	ROYAL COMMISSION YANBU MEDICAL CENTER	1	0	0	0	0	0
28	AL HADA MILITARY HOSPITAL TAIF	1	0	0	0	0	0
29	AL THAGER HOSPITAL JEDDAH	1	0	0	0	0	0
	TOTAL	**84 (20.5%)[1]**	**51**	**38**	**11 (15%)[2]**	**10**	**9**

[1]Percentage from total possible donors
[2]Percentage from total consented donors

Small hospital ICU's having less than 10 ICU beds capacity contributed 59 possible donors, documented (potential) 41 donors and utilized 8 organ donors. The top 5 reporting hospitals were Jubail General Hospital with 8 possible, 7 potential but no consent was obtained, Al Hamadi Hospital Swaidi with 8 possible, 7 potential and also no consents, Qateef Central Hospital 5, 3 and 2 utilized donors, King Khalid General Hospital Hafar Al Batin, 3, 3 and 0 and Al Ahsa Hospital 3, 2 and 0.

Table 1.7.4 Hospitals with ICU's Having Less than 10 Beds

No.	HOSPITAL NAME	POSSIBLE	POTENTIAL	ELIGIBLE	CONSENTED	ACTUAL	UTILIZED
1	JUBAIL GENERAL HOSPITAL	8	7	5	0	0	0
2	AL HAMADI HOSPITAL SWAIDI	5	5	5	0	0	0
3	QATEEF CENTRAL HOSPITAL	5	3	2	2	2	2
4	KING KHALID GENERAL HOSPITAL HAFAR AL BATIN	3	3	3	0	0	0
5	AL AHSA HOSPITAL	3	2	2	1	0	0
6	KINGDOM HOSPITAL RIYADH	3	0	0	0	0	0
7	AL YAMAMAH HOSPITAL RIYADH	2	2	2	1	1	1
8	JOHN HOPKINS ARAMCO HEALTH CARE	2	2	2	1	1	1
9	TADAWI GENERAL HOSPITAL DAMMAM	2	2	2	1	1	1
10	AL MOWASAT HOSPITAL DAMMAM	2	2	1	0	0	0
11	MATERNITY AND CHILDREN HOSPITAL DAMMAM	2	1	1	1	1	1
12	JEDDAH NATIONAL HOSPITAL	2	1	1	0	0	0
13	KHAMIS MUSHAYAT GENERAL HOSPITAL	2	0	0	0	0	0
14	ELITE HOSPITAL RIYADH	1	1	1	1	1	1
15	AL SALAM HOSPITAL RIYADH	1	1	1	1	1	1
16	ROYAL COMMISSION HOSPITAL JUBAIL	1	1	1	0	0	0
17	AL MANA GENERAL HOSPITAL JUBAIL	1	1	1	0	0	0
18	KHAFJI NATIONAL HOSPITAL	1	1	1	0	0	0
19	AL QUWAYIYAH GENERAL HOSPITAL	1	1	1	0	0	0
20	DALLAH HOSPITAL	1	1	1	0	0	0
21	PRINCE SAUD BIN JJALAWI HOSPITAL HOFUF	1	1	1	0	0	0
22	AL SULAYYIL GENERAL HOSPITAL	1	1	1	0	0	0
23	DR. SAMIR ABBAS HOSPITAL JEDDAH	1	1	0	0	0	0
24	AL MOOSA SPECIALIST HOSPITAL AL HASSA	1	1	0	0	0	0

Table 1.7.4 Hospitals with ICU's Having Less than 10 Beds (Continuation)

No.	HOSPITAL NAME	POSSIBLE	POTENTIAL	ELIGIBLE	CONSENTED	ACTUAL	UTILIZED
25	HAYAT HOSPITAL JEDDAH	1	0	0	0	0	0
26	FAMILY CARE HOSPITAL RIYADH	1	0	0	0	0	0
27	AL BADAYAH GENERAL HOSPITAL	1	0	0	0	0	0
28	PRINCE MISHARI BIN SAUD HOSPITAL BALJURASHI	1	0	0	0	0	0
29	AL NARIYA GENERAL HOSPITAL	1	0	0	0	0	0
30	SECURITY FORCES HOSPITAL MAKKAH	1	0	0	0	0	0
31	MATERNITY AND CHILDREN HOSPITAL SAKKAKA	1	0	0	0	0	0
	TOTAL	**59 (14%)[1]**	**41**	**35**	**9 (12%)[2]**	**8**	**8**

[1]Percentage from total possible donors
[2]Percentage from total consented donors

Hospitals with ICU's Organ Sharing from GCC Countries

Deceased organ sharing is well established within the GCC countries and this year it had contributed 30 possible donors, documented (potential) 29 donors and utilized 21 organ donors. Most the deceased donors shared to KSA were both from Kuwait and UAE with Kuwait having 16 possible donors, 16 potential and 13 utilized while UAE had 14 possible, 13 potential and 8 utilized donors.

Table 1.7.5 Hospitals outside the Kingdom of Saudi Arabia

No.	HOSPITAL NAME	POSSIBLE	POTENTIAL	ELIGIBLE	CONSENTED	ACTUAL	UTILIZED
1	MUBARAK AL KABEER HOSPITAL KUWAIT	5	5	5	4	4	4
2	FARWANIYA HOSPITAL KUWAIT	4	4	4	3	3	3
3	CLEVELAND CLINIC ABUDABI	4	4	4	3	3	3
4	AL ADAN HOSPITAL KUWAIT	3	3	3	2	2	2
5	SHEIKH KHALIFA MEDICAL CITY	2	2	2	2	2	2
6	MADINAT ZAYED HOSPITAL ABUDHABI	2	2	2	2	2	1
7	TAWAM HOSPITAL AL AIN UAE	2	2	2	2	1	1
8	AMIRI HOSPITAL KUWAIT	1	1	1	1	1	1
9	BIN SINA HOSPITAL KUWAIT	1	1	1	1	1	1
10	JAHRA HOSPITAL KUWAIT	1	1	1	1	1	1
11	MEDICLINIC CITY HOSPITAL DUBAI	1	1	1	1	1	1
12	SABAH HOSPITAL KUWAIT	1	1	1	1	1	1
13	ASTER HOSPITAL DUBAI	1	1	1	1	0	0
14	FUJAIRAH HOSPITAL UAE	1	1	1	0	0	0
15	DUBAI MEDCLINIC	1	0	0	0	0	0
	TOTAL	**30 (7%)[1]**	**29**	**29**	**24 (32%)[2]**	**22**	**21**

24 Total Utilized donor from Kuwait and UAE; of which 12 cases were utilized by KSA

[1]Percentage from total possible donors
[2]Percentage from total consented donors

Distribution of consents by region shows that 33 (45%) consents were obtained from the Central region (from 21 MOH hospitals, 6 from Govt. Non-MOH hospitals and 6 from private hospitals). The Eastern region came next with 10 consents which constitutes (5 from MOH hospitals, 1 from Govt.-Non-MOH and 4 from Private). Northern region had 4 consents (3 MOH hospitals and 1 Govt.-Non-MOH). The Western region follows with 3 consents (2 MOH hospitals, and 1 Govt.-Non-MOH). It is also worth noting that hospitals from GCC countries had contributed 24 consents giving a total 74 consents this year. (see table 1.7.6).

Table 1.7.6 Distribution of possible, consented and actual deceased donors according to region 2020

Region	No. of Hospitals	Possible DD	Consent for Organ Donation	Actual DD
Central (Riyadh, Kharj and Qassim)	37	183	33	31
Western (Jeddah, Makkah, Madinah & Taif)	29	82	3	1
Eastern (Dammam, Hofuf, Al Khobar, Dhahran, Khafji, Qateef, Jubail & Hafar Al Baten)	27	67	10	8
Northern (Tabuk, Al Jouf, Hail and Northern Borders)	7	29	4	3
Southern (Assir, Al Baha, Gizan & Najran)	6	17	0	0
Outside KSA (Kuwait, Qatar, UAE, & Bahrain)	15	30	24	22
Total	**121**	**408**	**74**	**65**

A total number of 121 hospitals had reported 408 possible deceased donors (DD) this year of 2020 wherein, 74 consents were obtained for organ donation & 65 donors were converted to actual deceased organ donors.

Figure 1.7.3 Deceased Organ Donation Activity in KSA by Region

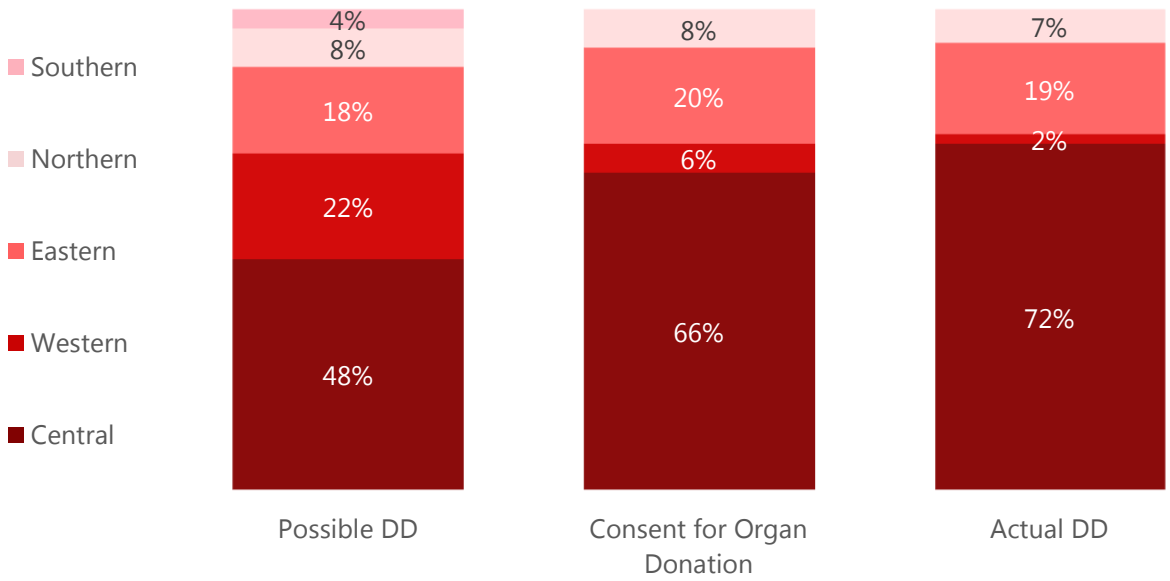


Table 1.7.7 Deceased Organ Donation Activity in KSA by Sector

Region	Number of hospitals	Possible DD	Consent for Organ Donation	Actual DD
Ministry of Health	54	247	31	27
Government Non-MOH	19	68	9	8
Private sectors	32	63	10	7
GCC country	15	30	24	21
Total	**120**	**408**	**74**	**63**

Organ Transplantation in the Kingdom of Saudi Arabia

2.1 Kidney Transplantation

In the year 2020, 549 kidneys were transplanted inside the kingdom of Saudi Arabia with 477 kidneys transplanted from living donors and 72 were transplanted from deceased donors. (Details of the living and deceased kidney transplantation are shown in Table 2.1.1)

It is worth mentioning that a total of 14,190 kidneys were transplanted inside the kingdom from 1979-2020; of these transplantation activities, 9,894 (70%) were from living related, 3,466 (24%) were from deceased donors and 830 (6%) from living unrelated kidney donor. Illustration of the cumulative living and deceased kidney transplantation is shown in figure 2.1.1.

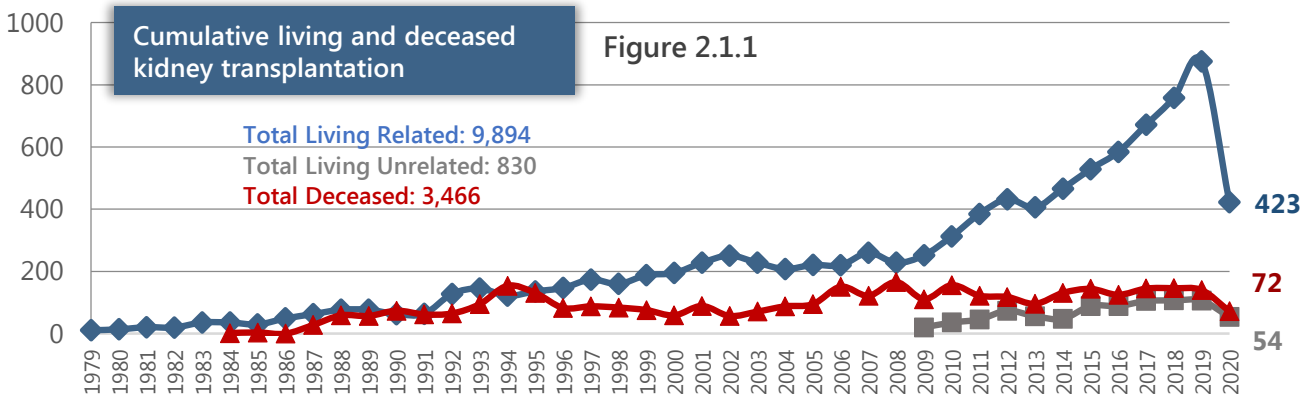
Table 2.1.1: Living and deceased kidney transplantation

N	Transplant Center	Living		Deceased	Total kidneys
		Related	Unrelated		
1	KFSH Riyadh	142	6	31	179
2	KAMC Riyadh	71	26	13	110
3	KFSH Jeddah	71	8	1	80
4	KFSH Dammam	62	4	11	77
5	PSMMC Riyadh	21	3	13	37
6	AFHSR Khamis Mushayt	13	3	0	16
7	DSFH Jeddah	16	0	NA	16
8	AHMH Taif	9	0	0	9
9	KAMC Jeddah	6	2	0	8
10	KSMH Tabuk	3	2	2	7
11	KFH Madinah	4	0	0	4
12	KAMC Makkah	3	0	0	3
13	KFAFH Jeddah	1	0	1	2
14	SGH Jeddah	1	0	NA	1
15	DSHH Swaidi Riyadh	0	0	NA	0
16	National Hospital Riyadh	0	0	NA	0
17	KFH Jeddah	0	0	0	0
	Total	**423**	**54**	**72**	**549**

Transplant centers performing living and deceased kidney transplantation in 2020

Cumulative living and deceased kidney transplantation

Figure 2.1.1

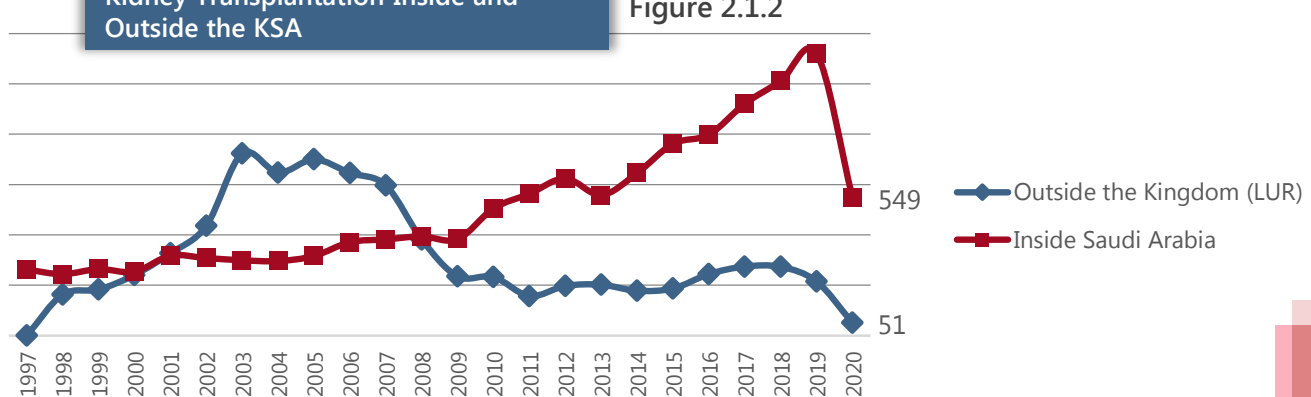


Details of living and deceased kidney transplantation in the Kingdom of Saudi Arabia during 1979-2020

Total number of kidneys transplantation(1979-2020)	**14,190**

Kidney Transplantation Inside and Outside the KSA

Figure 2.1.2



*LUR: Living Un-Related Kidney Transplant

2.1.1 Deceased Kidney Donation

74 deceased donors were consented for the purpose of organ donation and (100%) were consented for kidney donation; 50 donors were from KSA and 24 were from other GCC countries. A Total of 54 donors were consented for KSA including 4 donors offered from GCC countries of which 43 (86 kidneys) donors kidneys were recovered; 37 donors were utilized by KSA and 11 donors were non-recovered. From the recovered donors 72 kidneys were transplanted, 12 discarded, 1 non-recovered (right supra-renal mass, and 1 kidney transplanted by (Kuwait). (See details of utilized kidney donor characteristics inside the kingdom are listed in table 2.1.1.2 and the details of the deceased kidney donation are listed in tables 2.1.1.1 & figure 2.1.1.1 cumulative).

Table 2.1.1.1: Deceased kidney donation 2020

Kidneys from deceased donors	N	%
Transplanted in KSA	72	49%
Not recovered kidneys	23	16%
Discarded kidneys	12	8%
Kidneys for GCC*	41	28%
Total	148	100%

*Kidneys for GCC- other donor organs (e.g. liver, heart, lungs) were offered or shared to KSA except the kidneys.

Figure 2.1.1.1: Recovered Deceased Kidneys 1986-2020

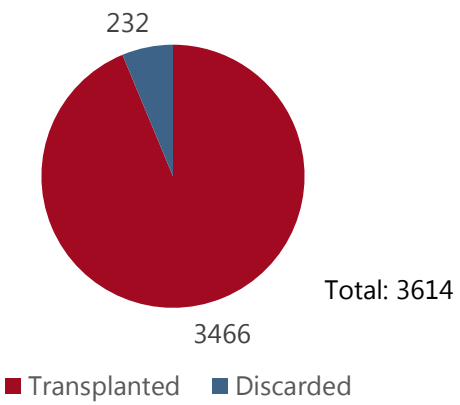


Table 2.1.1.2: Deceased kidney donor characteristics

Characteristics of utilized deceased kidney donors in KSA 2020

Characteristic	N	%
Age		
0-10	**4**	7%
11-20	4	1%
21-30	4	18%
31-40	6	28%
41-50	15	31%
51-60	3	12%
61-70	1	3%
Blood Group		
A	14	38%
B	13	35%
AB	3	8%
O	7	19%
Gender		
Male	33	89%
Female	4	11%
Donor Type		
SCD	31	84%
ECD	6	16%
Cause of Death		
Anoxia	9	24%
CVA	19	52%
Head trauma	9	24%
CNS tumor	0	
Cirumstance of Death		
MVA	7	19%
Non-MVA	30	81%

2.1.1.1 Kidney Donor Risk Index (KDRI)

KDRI for utilized kidney from 37 deceased donors were ranging from 0.61 to 2.83 with mean KDRI 1.04; of which 18 (49%) of the cases has the KDRI <1, 18 (49%) are between 1-1.5 and 1 (2%) had KDRI of 1.5 above.

2.1.2 Deceased Kidney Transplantation

148 deceased kidneys were consented for the purpose of transplantation of the total consented kidneys 100 consented kidneys were from KSA and 48 kidneys were from GCC countries. Of the consented kidneys, 107 kidneys were offered to KSA including 5 kidneys from GCC countries of which: transplanted kidneys 72; Discarded, 12; and Non-recovered kidneys were 23. Transplantation was performed by 8 out of the 11 currently active deceased kidney transplant centers all over the Kingdom. (See table 2.1.2.1). Illustration of the cumulative deceased kidney transplantation is shown in figure 2.1.2.1.

Table 2.1.2.1: Deceased kidney transplantation 2020

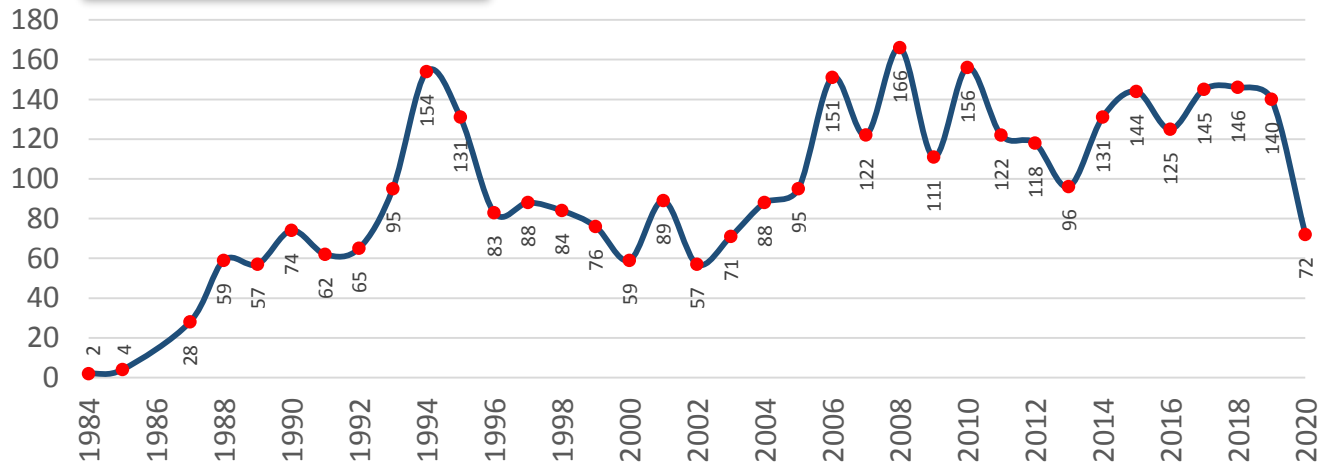
Transplant Center	Transplanted Kidneys
King Faisal Specialist Hospital & Research Center-Riyadh	31*
Prince Sultan Military Medical City-Riyadh	13
King Abdulaziz Medical City & National Guard Hospital-Riyadh	13
King Fahd Specialist Hospital-Dammam	11*
King Salman Military Hospital-Tabuk	2
King Faisal Specialist Hospital & Research Center-Jeddah	1
King Fahd Armed Forces Hospital-Jeddah	1
Al Hada Military Hospital-Taif	0
King Faisal Military Hospital-Khamis Mushayt	0
Total	**72**

Performance of deceased kidney transplantation in currently active national kidney transplant centers in 2020

***4 kidneys transplanted as en-bloc to 2 recipients**

Cumulative deceased kidney transplantation 1984-2020

Figure 2.1.2.1



Total deceased kidney transplantation	3,466

2.1.2.1 Non-recovered deceased kidneys

148 deceased kidneys were consented for kidney donation; out of which, 23 kidneys were not recovered (See table 2.1.2.2 for non-recovered kidneys inside the kingdom). The major causes of non-recovered kidneys are shown in Figure 2.1.2.2.

Table 2.1.2.2: Reasons of non-recovered deceased kidneys in 2020

Reasons of Non-Recovery	N	%
Sudden cardiac arrest	**8**	35%
Diseased Kidneys	**6**	26%
• ECD, High KFT	*4*	
• CKD	*2*	
Infection	**8**	35%
• COVID-19	*2*	
• Sepsis/MDRO with High Scr.	*4*	
• Viral Meningitis	*2*	
Supra Renal Mass	***1***	4%
Total	**23**	**100%**

2.1.2.2 Discarded deceased kidneys

148 deceased kidneys were consented for kidney donation; of which 12 (6%) kidneys were discarded by KSA (see table 2.1.2.4 discarded kidneys inside Kingdom). Causes of discarded deceased kidneys from 1986-2020 are listed in table 2.1.2.3.

Table 2.1.2.3: Causes of discarded deceased kidneys

Cause	N	%
Congenital & vascular anomalies	38	16%
CKD	25	11%
Traumatic renal injury	26	11%
Necrosis	20	9%
Malignancy & neoplastic kidney	20	9%
No available suitable recipient	15	6%
Fibrosis/sclerosis	14	6%
Technical	9	4%
Vascular thrombosis	9	4%
TB	7	3%
Glomerulosclerosis	15	6%
Sepsis	6	3%
Poor Perfusion	13	6%
Sent abroad	3	1%
Multiple renal stones	2	1%
Multiple kidney cyst	5	2%
Pyelonephritis	3	1%
Black discoloration	1	0.5%
Short ureter	1	0.5%
Total	232	100%

Discarded kidneys among actual deceased donors during 1986-2020

2.1.2.3 Cold ischemia time (CIT)

The CIT for locally transplanted deceased kidneys were ranging from 1 hour to 23 hrs. 50 min., with a mean CIT of 8 hrs. and 32 minutes. Wherein, 62 (86%) of the deceased kidneys were transplanted with, CIT of <12 hrs., and 10, (14%) were transplanted with CIT ranging from ≥12-24 hours

Figure 2.1.2.2: Major Causes of non-recovered deceased kidneys 2020

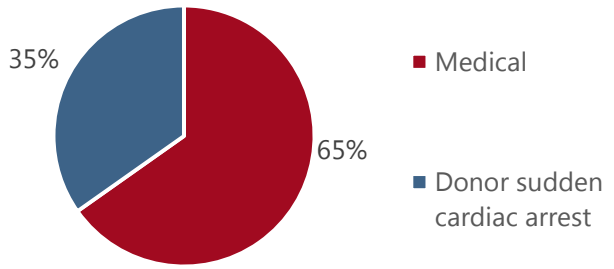


Table 2.1.2.4: Reasons of discarded deceased kidneys

Reason of Discard	N	%
Severe Glumerulosclerosis	6	50%
Tubular loss; fibrosis	2	17%
Multiple Cyst	2	17%
Supra renal mass	1	8%
Recipient refused to come	1	8%
Total	**12**	**100%**

2.1.2.4 Adult and pediatric deceased kidney transplantation 2020

72 deceased kidneys were transplanted to 70 recipients with 2 enbloc kidney transplant, which 63 (88%) kidneys transplanted to 61 adult recipients (2 enbloc) and 9 (12%) kidneys were transplanted to pediatric recipient (see table 2.1.2.5).

Table 2.1.2.5: Adult and pediatric deceased kidney transplantation by transplant center 2020

Transplant Center	Adult	Pediatric	Total
King Faisal Specialist Hospital & Research Center-Riyadh	26*	4	30*
Prince Sultan Military Medical City-Riyadh	13	0	13
King Abdul-Aziz Medical City & National Guard-Riyadh	10	3	13
King Fahd Specialist Hospital-Dammam	8*	2	10*
King Salman Military Hospital-Tabuk	2	0	2
King Faisal Specialist Hospital & Research Center-Jeddah	1	0	1
King Fahd Armed Forces Hospital-Jeddah	1	0	1
Al Hada Military Hospital-Taif	0	0	0
King Faisal Military Hospital-Khamis Mushayt	0	0	0
King Fahad Hospital-Madinah	26	4	30
King Fahd Hospital-Jeddah	13	0	13
Total	**61**	**9**	**70**

***72 kidneys were transplanted to 70 recipients with 4 kidneys transplanted via enbloc to 2 Adult recipients.**

2.1.2.5 SCD & ECD kidney transplantation

72 deceased kidneys were transplanted to 70 recipients (2 enbloc transplantation) with 61 (85%) kidneys were transplanted from standard criteria donors (SCD) and the remaining 11 (15%) kidneys transplanted from expanded criteria donors (ECD). The criteria for ECD kidneys transplanted are listed in table 2.1.2.6.

Table 2.1.2.6: Transplanted deceased ECD kidneys in 2020

Characteristics	Utilized Kidneys
Age ≥ 60 years	2 (18%)
Age 50-59 years and having 2 of the following:	7 (64%)
• CVA	
• Hypertension	
• SCr. ≥ 133 µmol/L (1.5 mg/dl)	
CVA, Hypertension and SCr. result doubled during admission and before retrieval	2 (18%)
TOTAL	**11 (100%)**

***2 kidneys transplanted as enbloc**

2.1.2.6 Deceased donor–recipient matching

Matching gender was done in 68% of cases and matching blood group for kidney transplantation between deceased donors and recipients were done in 100% of the cases. Age distribution between deceased kidney donor and recipient is shown in table 2.1.2.7.

Table 2.1.2.7: Age distribution between deceased kidney donor and recipients 2020

Donor Age (yrs.)	Recipient Age (yrs.)						Recipient/ Kidneys
	<5	5-15	16-29	30-50	51-65	>65	
<5		1	4				5/6
5-15		2	4	1			7
16-29		2	2	3	1	1	9
30-50		4	2	20	13	2	41/42
51-65			1		6	1	8
>65							0
Total	**0**	**9**	**13**	**24**	**20**	**4**	**70/72**

2.1.3 Living Kidney Transplantation

A total of 477 living kidney transplants were performed; with 423 (89%) kidneys transplanted from living related (LR) donors and 54 (11%) kidneys from living unrelated donors. The total living kidney transplantation this year were performed in 14 out of 16 currently active kidney transplant centers in in the Kingdom (see table 2.1.3.1).

Table 2.1.3.1: Living kidney transplantation 2020

Transplant Center	Living		T
	Related	Unrelated	
King Faisal Specialist Hospital, Riyadh	142	6	148
King Abdulaziz National Guard, Riyadh	71	26	97
King Faisal Specialist Hospital, Jeddah	71	8	79
King Fahad Specialist Hospital Dammam	62	4	66
Prince Sultan Military Medical City, Riyadh	21	3	24
King Fahad Military Hospital, Khamis Mushayt	13	3	16
Dr. Suleiman Al Fakeeh, Jeddah	16	0	16
Al Hada Armed Forces Hospital, Taif	9	0	9
King Abdulaziz National Guard, Jeddah	6	2	8
King Salman Military Hospital, Tabuk	3	2	5
King Fahad Hospital, Madinah	4	0	4
King Abdullah Medical City, Makkah	3	0	3
King Fahad Armed Forces Hospital Jeddah	1	0	1
Saudi German Hospital, Jeddah	1	0	1
National Hospital, Riyadh	0	0	0
Dr. Suleiman Al Habib Suwedi Riyadh	0	0	0
Total	**423**	**54**	**477**

Performance of living kidney transplantation in currently active national kidney transplant centers in 2020

2.1.4 Kidney donation and transplantation Outcome 2020

A total of 549 kidneys from living and deceased were transplanted this year and the top performing kidney transplant centers were KFSH Riyadh with 179 kidneys (148 Living and 31 deceased kidneys) and KAMC Riyadh with 110 kidneys (97 Living and 13 deceased kidneys).

2.1.4.1 Living kidney transplantation

477 kidney transplants were performed from living donation, a significant decrease from the previous year.

Figure 2.1.4.1.1: Living Related and Unrelated Kidney Transplantation 2020

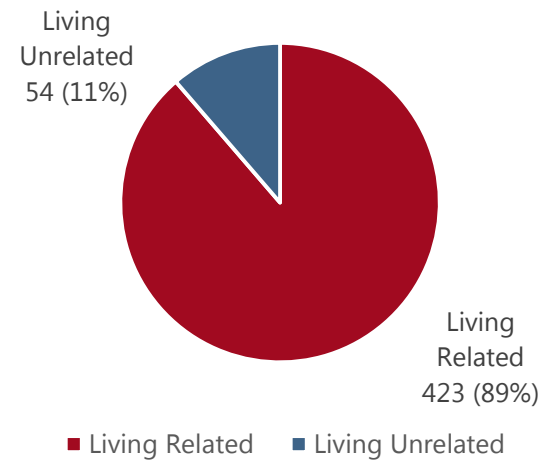
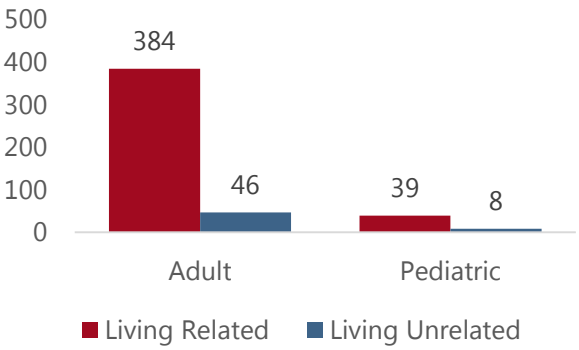


Figure 2.1.4.1.2: Adult and pediatric living kidney transplantation 2020



There were a total of 4 graft loss and 2 mortalities among living related kidney transplantation and none among living unrelated kidney transplants.

Table: 2.1.4.1.1: Adult and pediatric living kidney transplantation per transplant center 2020

Transplant Center	Adult	Pediatric	T
King Faisal Specialist Hospital, Riyadh	135	13	148
King Abdulaziz National Guard, Riyadh	93	4	97
King Faisal Specialist Hospital, Jeddah	77	2	79
King Fahad Specialist Hospital Dammam	58	8	66
Prince Sultan Military Medical City, Riyadh	24	0	24
King Fahad Military Hospital, Khamis Mushayt	16	0	16
Dr. Suleiman Al Fakeeh, Jeddah	0	16	16
Al Hada Armed Forces Hospital, Taif	9	0	9
King Abdulaziz National Guard, Jeddah	8	0	8
King Salman Military Hospital, Tabuk	5	0	5
King Fahad Hospital, Madinah	4	0	4
King Abdullah Medical City, Makkah	3	0	3
King Fahad Armed Forces Hospital Jeddah	1	0	1
Saudi German Hospital, Jeddah	1	0	1
National Hospital, Riyadh	0	0	0
Dr. Suleiman Al Habib Suwedi Riyadh	0	0	0
Total	**423**	**54**	**477**

Table: 2.1.4.1.2: Laparoscopic kidney transplantation by transplant center 2020

Transplant Center	Laparoscopic Transplantation	Total Kidney Transplantation
KFSH Riyadh	102	148
AFHSR Khamis Mushayt	12	16
KAMC Jeddah	8	8
Total	122	172

The total graft loss rate among living kidney transplantation is 4/477 (0.84%) and mortality rate at 2/981 (0.42%). The mean serum creatine was 85.19 µmol at discharged post-transplant.

2.1.4.1.1 Living Kidney Transplantation demographics

Age distribution among living kidney transplant recipients were majorly belonging from age groups between 20 to 69 years which consists of 88.2% of the total population (please see figure 2.1.4.1.1). In addition, donor and recipient sex distribution consisted of majority males at 72% and 68% respectively (see figure 2.1.4.1.2 & 2.1.4.1.3). Donor blood group as well consist majorly from O (61%), A (25%), B (12%) and AB (2%) and recipient wise consisted Marjory of O (52%) and A (28%), kindly see figure 2.1.4.1.4. & 2.1.4.1.5

Figure 2.1.4.1.1: Age distribution among living kidney transplant recipients 2020

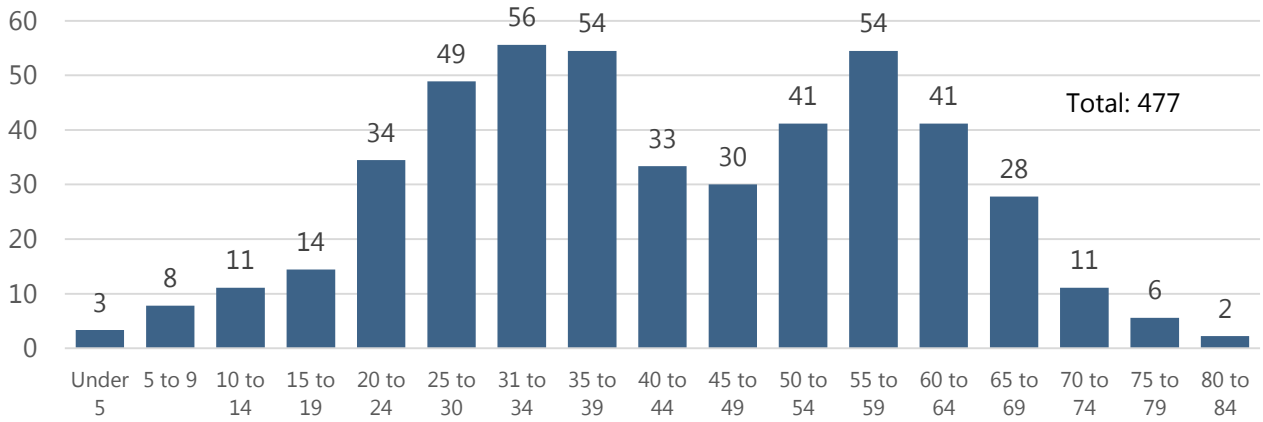


Figure 2.1.4.1.2: Living kidney donor sex distribution

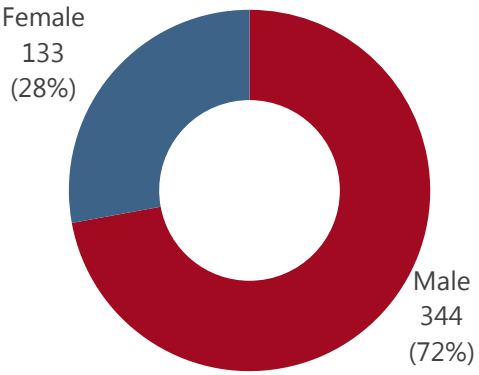


Figure 2.1.4.1.3: Living kidney recipient sex distribution

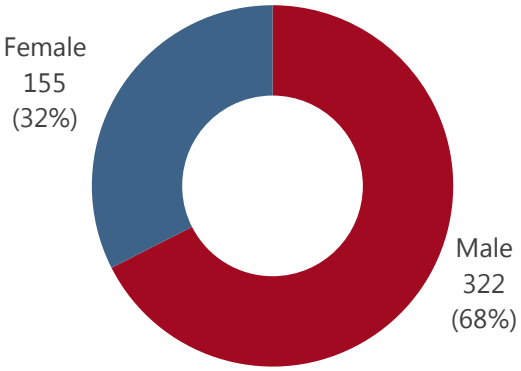


Figure 2.1.4.1.4: Living kidney donor blood group

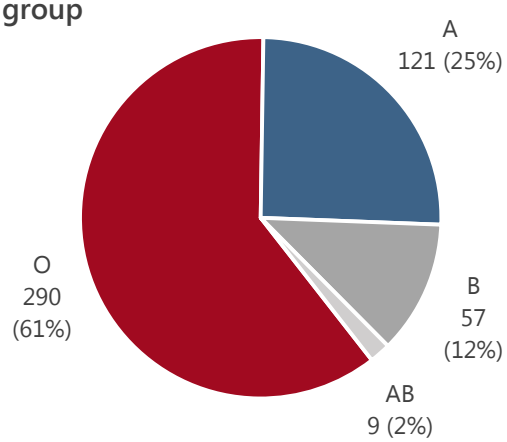
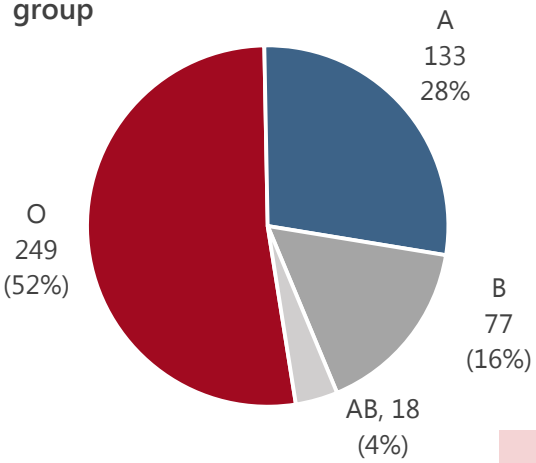


Figure 2.1.4.1.5: Living kidney recipient blood group



Donor-recipient blood group matching also shows that identical blood group were performed in 81% of transplant operations, 14% on compatible blood group and 5% in incompatible blood group donor and recipients (please see figure 2.1.4.1.6, 2.1.4.1.7 & 2.1.4.1.8). And lastly, the relationship of donors towards their recipients shows that majority were from between siblings with 36.6%, children 21.7%, parents 14%, 2nd degree relatives at 8.2%, spouse at 5.8% and a grandparent at 0.5%; unrelated kidney transplantation were performed in 13.3%. Please see table 2.1.4.1.8.

Figure 2.1.4.1.6: Identical donor-recipient blood group

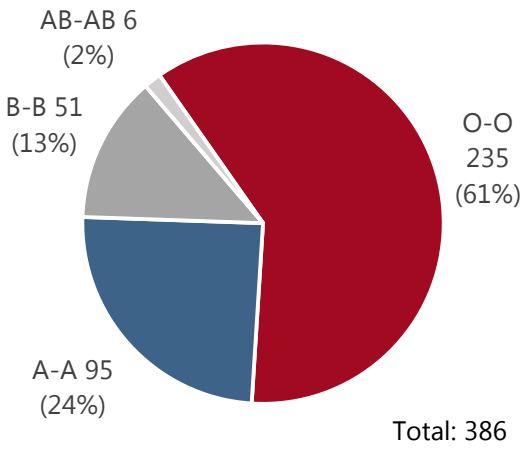


Figure 2.1.4.1.7: Compatible donor-recipient blood group

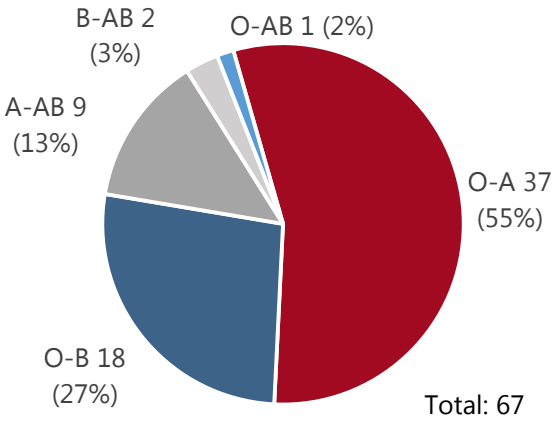


Figure 2.1.4.1.8: Incompatible donor-recipient blood group

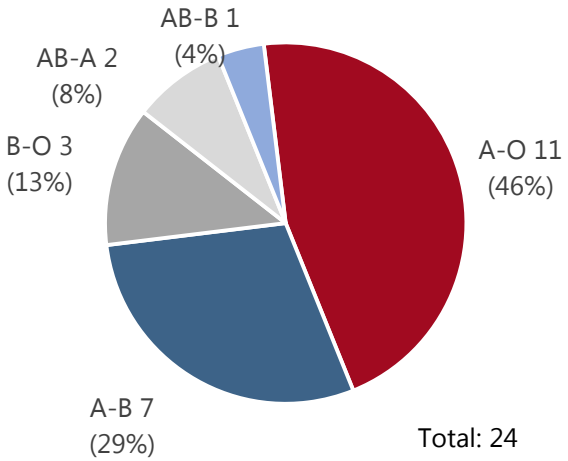


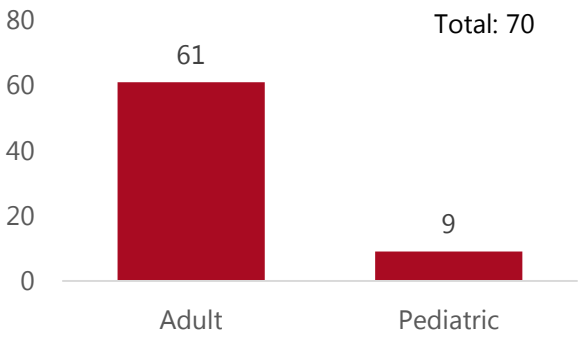
Table 2.1.4.1.3: Relationship of donor with recipient among living kidney transplantation 2020

Relationship	Number	%
Sibling	175	36.6%
Children	103	21.7%
Parents	67	14.0%
2nd Degree Relatives	39	8.2%
Spouse	28	5.8%
Grandparents	2	0.5%
Unrelated	63	13.3%
Total	477	100.0%

2.4.1.2 Deceased kidney transplantation

72 kidneys were recovered and transplanted to 70 recipients including the 2 en-bloc kidney transplants performed.

Figure 2.1.4.2.1: Adult and pediatric deceased kidney transplantation 2020



The total graft loss among deceased kidneys transplanted were 4/72 (5.5%) and having a mortality rate of 5/72 (7%). The mean serum creatine was 101.7 μmol at discharged post-transplant.

Organ Transplantation in the Kingdom of Saudi Arabia

2.2 Liver Transplantation

In the year 2020, 244 livers has been transplanted inside the kingdom of Saudi Arabia; with 193 livers transplanted from living and 51 transplanted from deceased donors including 4 split liver transplantation. Details of the living and deceased liver transplantation 2020 is shown in table 3.2.8). It is worth mentioning that a total of 3,066 livers was transplanted inside the kingdom from 1990 to 2020; of these livers, 1,196 (39%) were transplanted from deceased donors, 1,697 (55%) were from living related donors and 173(6%) were from living unrelated donors. Illustration of cumulative living and deceased liver transplantation is shown in (figure 2.2.1).

2.2.1 Deceased Liver Donation

74 deceased donors were consented for the purpose of organ donation of which, (100%) were consented for liver donation. Of the consented liver donors 66 donors were offered to KSA including 16 donors from GCC countries. Utilized livers donors of KSA were 47 including 10 from GCC, Non-recovered donors were 13, 4 from GCC and discarded livers were 2, 2 from GCC. The details of utilized liver donor characteristics are listed in table 2.2.1.1. Details of the cumulative deceased liver donation are listed in table 2.2.1.2.

Table 2.2.1.1. Deceased liver donor characteristics

Characteristic	N	%
Age		
0-10	3	6%
11-20	4	8%
21-30	5	11%
31-40	8	17%
41-50	20	43%
51-60	5	11%
61-70	2	4%
Blood Group		
A	16	34%
B	18	38%
AB	3	7%
O	10	21%
Gender		
Male	41	87%
Female	6	13%
Cause of Death		
Anoxia	8	17%
CVA	30	64%
Head trauma	9	19%
CNS tumor	0	
Others	0	
Cirumstance of Death		
MVA	7	15%
Non-MVA	40	85%

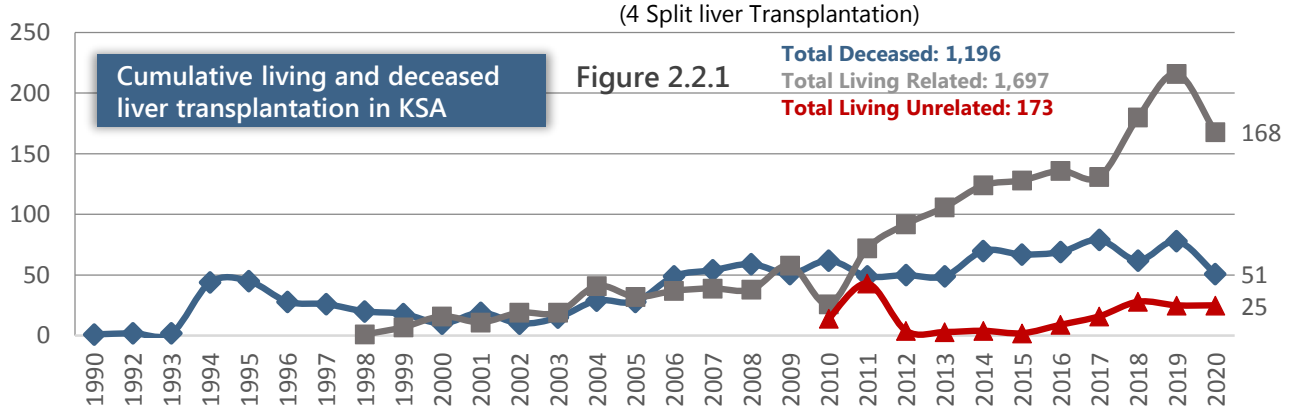
Characteristics of utilized deceased liver donors in 2020

Table 2.2.1.2 Deceased liver donation 2020

Livers from deceased donors	N	%
Transplanted in KSA	51*	63.5%
Not recovered livers	13	17.5%
Discarded livers	6	8%
Transplanted by other transplant centers in GCC countries	8	11%
Total	**74**	**100%**

*47 livers were recovered and transplanted to 51 recipients via (4 Split liver Transplantation)

Figure 2.2.1 Cumulative living and deceased liver transplantation in KSA



Total living and deceased liver transplantation 1990-2020 **3,066**

2.2.2 Deceased liver transplantation 2020

74 deceased livers were consented for transplantation; a total of 66 livers donors were consented and offered to KSA. 50 from KSA and 16 were offered from GCC countries. 47 liver donors were utilized including 10 livers from GCC countries were transplanted to 51 recipients with 4 split liver transplantation. The deceased liver transplantations this year were performed in 4 currently active liver transplant centers in the kingdom (see table 2.2.2.2).

It is worth mentioning that out of the 47 recovered livers, 54 recipients benefited with 4 livers transplanted as split to 8 recipients by King Faisal Specialist Hospital & Research Center in Riyadh

2.2.2.1 Non-recovered deceased livers

74 deceased liver donors were consented for transplantation of which 66 donors were offered to KSA, wherein, 13 donors were not recovered (see table 2.2.2.4). The major causes of non-recovered deceased livers are mainly due to donor sudden circulatory arrest and Infection. Major causes of non-recovered deceased livers in 2020 are listed in Figure 2.2.2.1. Illustration of the cumulative major cause non-recovered deceased liver transplantation from 1994 is shown in Figure 2.2.2.2.

2.1.2.2 Discarded deceased livers

74 deceased livers were consented for transplantation; a total of 66 livers were offered to KSA, of which 6 livers were discarded including 2 livers from GCC countries. (see table 2.2.2.1). Causes of discarded deceased livers from 1994-2019 are listed in (table 2.2.2.7).

Table 2.2.2.1: Reasons of discarded deceased livers

Reason of Discard	N	%
Chronic Hepatitis, fibrosis, inflammation	1	17%
Steatosis & donor arrested heparin was not given	1	17%
Fatty necrotic liver	1	17%
Steohepatitis	1	17%
Poor liver perfusion	1	16%
Recipient arrested during transplant	1	16%
Total	6	100%

Discarded livers among actual deceased liver donors in 2020

Table 2.2.2.2: Deceased liver transplantation

Hospital Name	Deceased Utilized Donors
King Faisal Specialist Hospital, Riyadh	19/23*
King Abdulaziz National Guard, Riyadh	16
King Fahad Specialist Hospital Dammam	8
Prince Sultan Military Medical City, Riyadh	4
Total	**47/51***

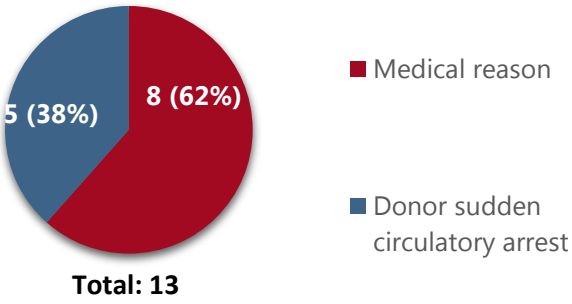
Performance of deceased liver transplantation in currently active national liver transplant centers in 2020
*19 Livers transplanted to 23 recipients via split liver transplantation by KFSH Riyadh.

Table 2.2.2.4. Reasons of non-recovered deceased livers

Reasons of Non-Recovery	N	%
Donor sudden cardiac arrest	**5**	**38.5%**
Macroscopic & Microscopic findings	**2**	**15%**
·Fibrotic and edematous	1	
·Massive hematoma; suspicious malignancy	1	
Infection	**5**	**38.5%**
·Viral Meningitis	1	
·MDRO/positive cultures/sepsis	2	
·Tuberculosis	1	
· COVID-19 positive	1	
No Available Suitable Liver Recipient	**1**	**8%**
· Size Mismatch	1	
Total	**13**	**100%**

Reasons of non-recovery of livers among eligible donors consented for liver donation in 2020

Figure 2.2.2.1: Major causes of non-recovered deceased livers



Total: 13

2.2.2.3 Adult and pediatric deceased liver transplantation

A total of 47 livers were recovered and transplanted to 51 recipients (4 livers transplanted via Split Transplantation). Deceased livers were transplanted inside the Kingdom were, 44 (86%) livers transplanted to adult and 7 (14%) livers transplanted to pediatric recipients aged ≤14 years old (see table 2.2.2.4).

Table 2.2.2.4: Adult and pediatric deceased liver transplantation

Liver Transplant Center	Adult	Pediatric ≤14 yrs	Total
King Faisal Specialist Hospital & Research Center-Riyadh	18	5	23*
King Abdul-Aziz Medical City and National Guard-Riyadh	14	2	16
King Fahd Specialist Hospital-Dammam	8	0	8
Prince Sultan Military Medical City	4	0	4
Total	**44**	**7**	**51**

Pediatric and adult deceased liver transplanted in currently active national liver transplant centers in 2020
*4 Livers Transplanted as split

2.2.2.4 Deceased donor-recipient matching

Matching sex was done in 29 (57%) of the cases and matching blood group for liver transplantation between deceased donors and recipients was done in 47 (92%) of the cases. Age distribution between deceased kidney donor and recipient is shown in table 2.2.2.5.

Table 2.2.2.5: Age distribution between deceased liver donor and recipients; *performed as split liver transplantation 2020

Donor Age (yrs.)	Recipient Age (yrs.)						Recipient/ Livers
	<5	5-15	16-29	30-50	51-65	>65	
<5		1	1				2
5-15	1	1	1		1		4
16-29	1	1		4	2		8
30-50		3	4	8	12	3	30
51-65			1	2	4		7
>65							
Total	**2**	**6**	**7**	**14**	**19**	**3**	**47/51**

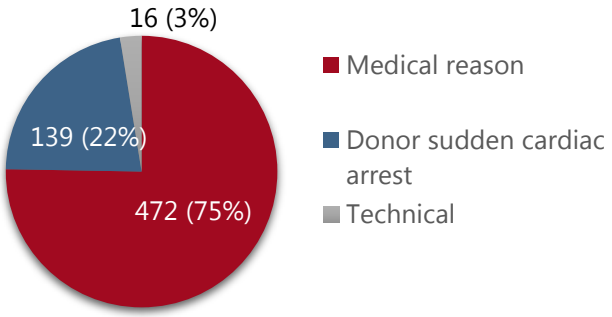
2.2.2.5 Cold ischemia time (CIT)

The Cold Ischemic time of transplanted livers from 47 donors and transplanted to 51 recipients (4 split livers) ranges from 01 hour 45 minutes to 11 hours 05 minutes. With a mean CIT of 5 hours 59 minutes. Breakdown of CIT of liver transplantation are as follows: <6 hours: 27 recipients (53%), ≥6 – 8 hours: 17 recipients (33%), and ≥8 - 12 hours: 7 recipients (14%).

Table 2.2.2.6: Major causes of non-recovered deceased livers 2020

Not recovered deceased livers	N	%
Medical reason	8	62%
Donor sudden cardiac arrest	5	38%
Technical	0	0%
Total	**13**	**100%**

Figure 2.2.2.2 Major causes of non-recovered deceased livers 1994-2020



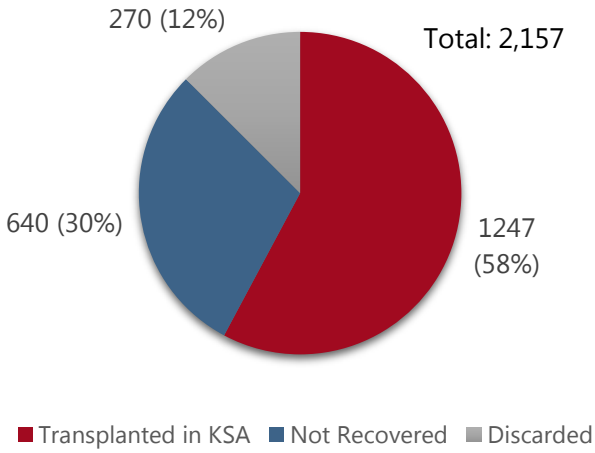
Major causes of non-recovered deceased livers among eligible donors consented for liver donation

Table 2.2.2.7:. Causes of discarded deceased livers 1994-2020

Major Causes	N	%
Macro/Microstasis, Steatosis (fatty Changes)	131	50%
Granulomatous Changes/Fibrosis/Atherosclerosis	52	20%
Ischemia/Long CIT	23	9%
Sepsis	12	5%
Neoplastic	9	3%
Infectious Disease (TB, Bilharziasis, Others)	6	2%
Hepatitis (B,C) Changes	6	2%
Cardiac Arrest (Donor/Recipient)	7	3%
Traumatic Liver Injury	7	3%
Cholestasis and ductopenia	3	1%
Congenital/Vascular Abnormalities	3	1%
Necrosis	3	1%
Poor liver perfusion	2	1%
Total	264	100%

Discarded livers among actual deceased donors consented for liver donation 1994-2020

Figure 2.2.2.8: Livers from deceased donors 1994-2020



2.2.3 Living Liver Transplantation

A total of 193 living liver transplants were performed this year; of which, 168 (87%) livers were transplanted from living related donors and 25 (13%) from living unrelated liver donors. The total living liver transplantations this year were performed in 5 liver transplant centers in the Kingdom (see table 2.2.3.1).

Table 2.2.3.1: Living liver transplantation

Transplant Center	Living Related	Living Unrelated	T
King Faisal Specialist Hospital, Riyadh	116	19	135
King Fahad Specialist Hospital Dammam	25	1	26
King Abdulaziz Medical City National Guard, Riyadh	16	5	21
Prince Sultan Military Medical City, Riyadh	10	0	10
Saudi German Hospital, Jeddah	1	0	1
National Hospital, Riyadh	0	0	0
Total	**168**	**25**	**193**

Table 2.2.3.2: Living and deceased liver transplantation

Transplant Center	Living		Deceased	T
	Related	Unrelated		
King Faisal Specialist Hospital, Riyadh	116	19	23	158
Prince Sultan Military Medical City, Riyadh	10	0	4	14
King Abdulaziz National Guard, Riyadh	16	5	16	37
King Fahad Specialist Hospital Dammam	25	1	8	34
Saudi German Hospital, Jeddah	1	0	0	1
National Hospital, Riyadh	NA	0	0	0
Total	**168**	**25**	**51**	**244**

Transplant centers performing living and deceased liver transplantation in 2020

2.2.4 Liver donation and transplantation Outcome 2020

A total of 244 livers from living and deceased were transplanted this year and the top performing liver transplant centers were KFSH Riyadh with 158 livers (135 Living and 23 deceased livers) and KAMC Riyadh with 37 livers (21 living and 16 deceased livers).

2.2.4.1 Living liver transplantation

193 liver transplants were performed from living donation, a significant decrease from the previous year.

Figure 2.2.4.1.1: Living Related and Unrelated Liver Transplantation 2020

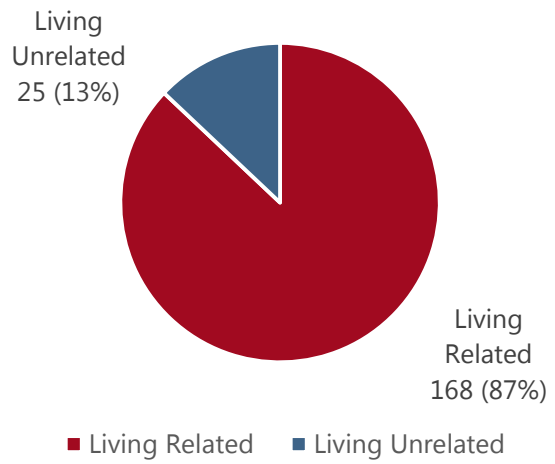
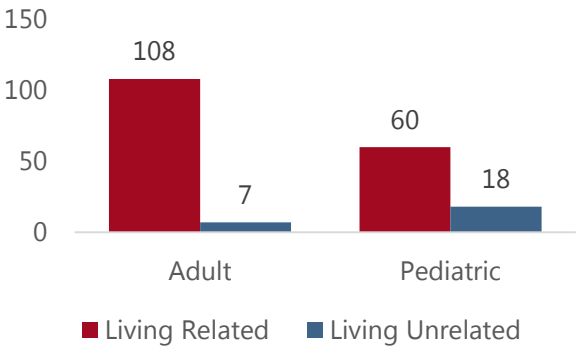


Figure 2.2.4.1.2: Adult and Pediatric Living Liver Transplantation 2020



There were a total of 8 graft loss and 11 mortalities among living related liver transplantation and none among living unrelated liver transplants.

A total of 193 living liver transplants were performed this year; of which, 116 (60%) livers were transplanted to adult recipients and 77 (40%) were transplanted to pediatric recipients. The total living liver transplantations this year were performed in 5 out of 6 currently active liver transplant centers in the Kingdom (see table 2.2.4.1.1).

Table: 2.2.4.1.1: Adult and Pediatric Living Liver Transplantation per transplant center 2020

Transplant Center	Pediatric	Adult	Total
King Faisal Specialist Hospital, Riyadh	53	82	135
Prince Sultan Military Medical City, Riyadh	1	9	10
King Abdulaziz National Guard, Riyadh	12	9	21
King Fahad Specialist Hospital Dammam	11	15	26
Saudi German Hospital, Jeddah	0	1	1
National Hospital, Riyadh	0	0	0
Total	**77**	**116**	**193**

Table: 2.2.4.1.2: Laparoscopic and Robotic liver transplantation by transplant center 2020

Transplant Center	Laparoscopic Surgery	Robotic Surgery	T Liver Tx.
KFSH Riyadh	0	124	124
KFSH Dammam	26	0	26
Total	26	124	150

The total graft loss rate among living liver transplantation is 8/193 (4.1%) and mortality rate at 11/193 (5.7%).

2.2.4.1.1 Living Liver Transplantation demographics

Age distribution among living kidney transplant recipients were majorly belonging from age groups between 0 and 14 years which consists of 40% of the total population (please see figure 2.2.4.1.3). In addition, donor and recipient sex distribution consisted of majority males at 70% and 69% respectively (see figure 2.2.4.1.4 & 2.2.4.1.5). Donor blood group as well consist majorly from O (61%), A (28%), B (10%) and AB (1%) and recipient wise consisted Marjory of O (51%) and A (32%), kindly see figure 2.2.4.1.6 & 2.2.4.1.7

Figure 2.2.4.1.3: Age distribution among living liver transplant recipients 2020

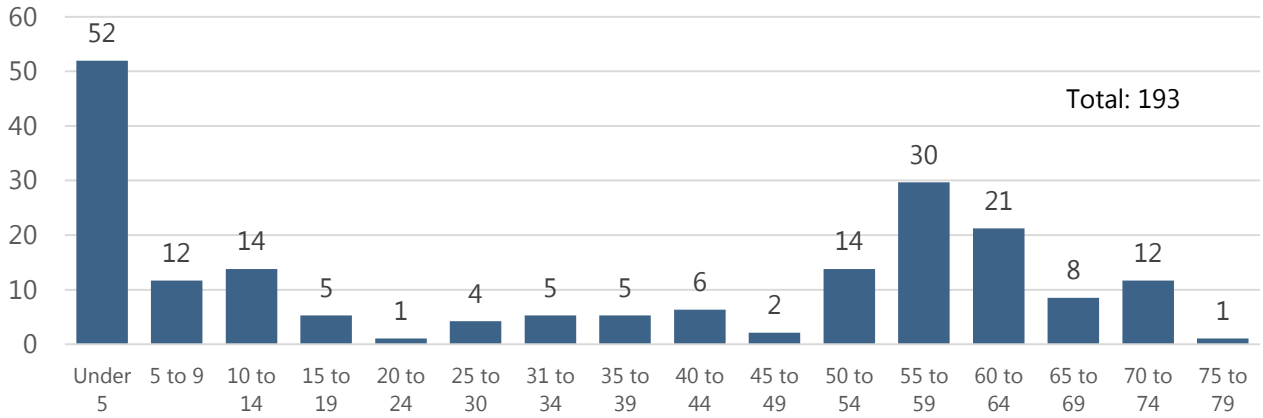


Figure 2.2.4.1.4: Living liver donor sex distribution

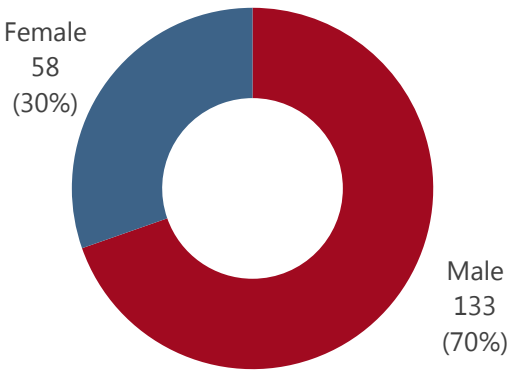


Figure 2.2.4.1.5: Living liver recipient sex distribution

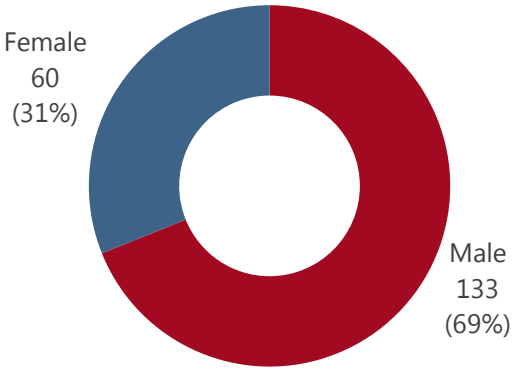


Figure 2.2.4.1.6: Living liver donor blood group

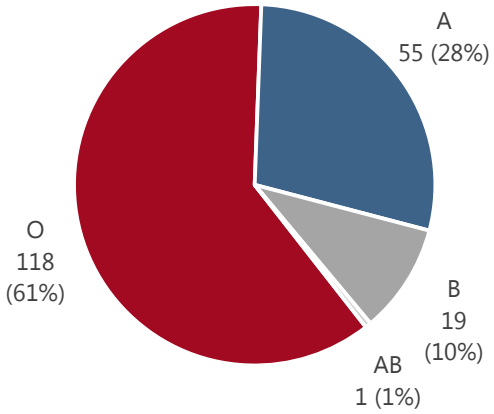
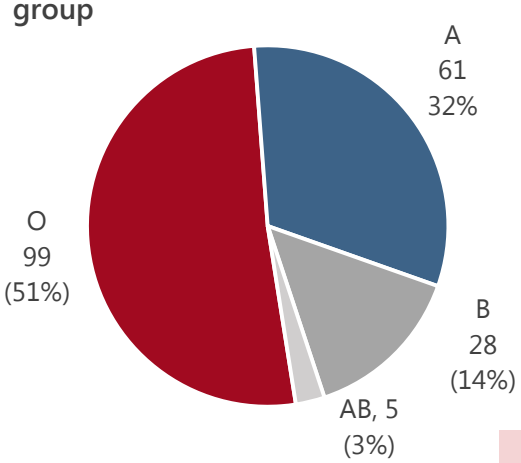


Figure 2.2.4.1.7: Living liver recipient blood group



Donor-recipient blood group matching also shows that identical blood group were performed in 80% of transplant operations, 16% on compatible blood group and 4% in incompatible blood group donor and recipients (please see figure 2.1.4.1.8, 2.1.4.1.9 & 2.1.4.1.10). And lastly, the relationship of donors towards their recipients shows that majority were from between children (29%), parents and 2nd degree relatives (20%) and siblings (16%); unrelated liver transplantation were performed in 13% of transplant operations (please see table 2.2.4.1.3).

Figure 2.2.4.1.8: Identical donor-recipient blood group

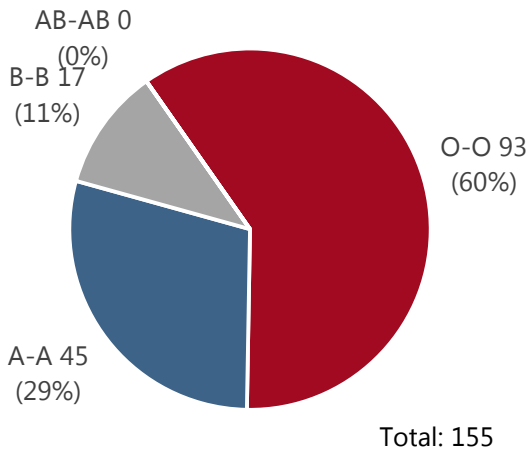


Figure 2.2.4.1.9: Compatible donor-recipient blood group

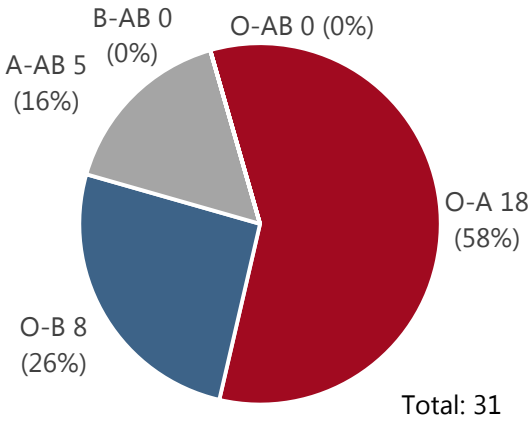


Figure 2.2.4.1.10: Incompatible donor-recipient blood group

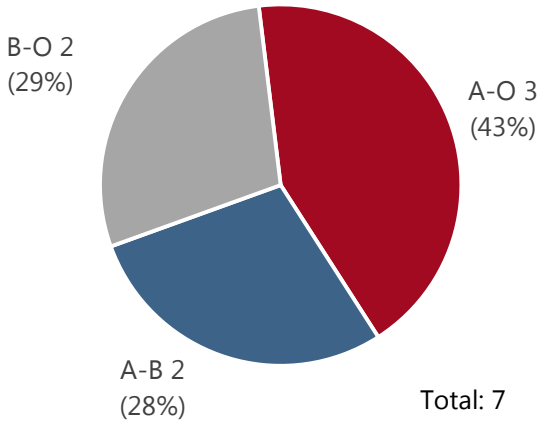


Table 2.1.4.1.3: Relationship of donor with recipient among living liver transplantation 2020

Relationship	Number	%
Children	56	29%
Parents	39	20%
2nd Degree Relatives	39	20%
Sibling	31	16%
Unrelated	24	13%
Spouse	3	1.5%
Grandparents	1	0.5%
Total	193	100%

Organ Transplantation in the Kingdom of Saudi Arabia

2.3 Heart Transplantation

In the year 2020, 49 hearts were recovered of which 28 hearts were transplanted and 21 hearts were recovered as source of valves inside the kingdom of Saudi Arabia. It is worth mentioning that a total of 477 hearts has been transplanted from 1986-2020 in addition, 728 hearts were recovered as sources of valves since 1993. Illustration of the cumulative deceased heart transplantation and recovered hearts as source of valves in Saudi Arabia is shown in figure 2.3.1.

2.3.1 Deceased Heart Donation 2020

74 deceased donors were consented for the purpose of organ donation with (100%) donors consented for heart donation (see table 2.3.1.3); of the, consented heart donors, 70 hearts were offered to KSA of which 50 were from KSA and 20 from other GCC countries. Total transplanted whole hearts by the KSA were 28 including 9 shared heart from GCC countries. 21 hearts were also recovered as source for valves including 2 from GCC countries. 21 hearts were non-recovered including 8 hearts offered from GCC. The characteristics of the transplanted utilized deceased heart donor by the KSA are listed in table 2.3.1.1. Illustration of the cumulative deceased heart donation from 1986 is shown in table 2.3.1.2.

Table 2.3.1.1: Deceased heart donor characteristics

Characteristic	N	%
Age		
0-10	1	
11-20	3	
21-30	4	
31-40	6	
41-50	13	
51-60	1	
Blood Group		
A	11	
B	9	
AB	1	
O	7	
Gender		
Male	23	
Female	5	
Cause of Death		
Anoxia	4	
Cerebrovascular/Stroke	13	
Head trauma	11	
CNS Tumor	0	
Cirumstance of Death		
MVA	9	
Non-MVA	19	

Characteristics of utilized deceased heart donors in 2020

Table 2.3.1.2: Deceased heart donation 1986-2020

Hearts from deceased donors	N	%
Consented	2,006	90%
• Recovered as source of valves	728	
• Not recovered	797	
• transplanted	477	
• Discarded	0	
Not consented	233	10%
Total	**2,239**	**100%**

Table 2.3.1.3: Deceased heart donation 2020

Hearts from deceased donors	N	%
Consented	74	100%
• Not recovered	21	
• Transplanted whole heart	28	
• Recovered as source of valves	21	
• Heart for GCC*	4	
Total	**74**	**100 %**

*Heart for GCC- other donor organs (e.g. liver, lungs) were offered or shared to KSA except the heart.

2.3.2 Deceased Heart Transplantation

74 deceased hearts were consented for the purpose of heart transplantation; wherein, 50 consented donors were from KSA including and 24 were from GCC countries. Of these 28 hearts were transplanted, 21 were recovered as source of valves, 4 were for GCC countries and 21 were non-recovered heart donors. (See table 2.3.2.2) For transplanted hearts (See table 2.3.2.1) Heart as source for valves.

Table 2.3.2.1: Heart for valve recovery and utilization

Total Collected Heart for HFV	21	
HFV Utilization	**Aortic valve**	**Pulmonary valve**
Total Collected	17	17
Used	5	6
To be used	5	4
Discarded	7	7

Recovered heart as source of valves from eligible deceased hearts in 2020

2.3.2.1 Non-recovered deceased hearts

74 deceased hearts were consented for heart donation; out of which 21 (28%) were not recovered (see table 2.3.2.3). The major causes of non-recovered deceased hearts are mainly due to determined unsuitable heart donor, poor heart function and no available suitable recipients.

2.3.2.2 Cold ischemia time (CIT)

CIT for the 28 deceased hearts transplanted was ranging from 1 hr. 38 minutes to 6 hours with a mean CIT of 3 hrs. 36 minutes. Of these 17 hearts were transplanted with CIT of ≤4 hours, 7 with CIT ≤5 hours, and 4 with CIT of >5 hours.

2.3.2.3 Adult and pediatric heart transplantation

28 hearts were transplanted inside the kingdom with 20 (71%) hearts utilized for adult recipients and 8 (29%) hearts for pediatric recipients with age ≤ 14 years (2.3.2.4).

Table 2.3.2.2: Deceased hearts transplantation 2020

Transplant Center	Transplanted Deceased Hearts
King Faisal Specialist Hospital & Research Center-Riyadh	20
Prince Sultan Cardiac Center-Riyadh	8
Total	28

Performance of deceased heart transplantation in currently active national heart transplant centers in 2020

Table 2.3.2.3: Reasons of non-recovered deceased hearts

Reasons of Non-Recovery	N	%
Determined Unsuitable Heart Donor	**6**	**29**
·Diseased Heart	*6*	
Poor Heart Function	**1**	**5**
·Low Ejection Fraction	*1*	
No Available Suitable Recipient	**3**	**14**
·No ABO compatible recipient	3	
Donor Sudden Cardiac Arrest	**5**	**24**
Infection	**4**	**19**
·Sepsis/MDRO	*2*	
·COVID-19	*1*	
·Septic Emboli	*1*	
Technical	**2**	**9**
·Cardiac Cath can't be performed	*1*	
·Recipient refused to come	*1*	
Total	**21**	**100%**

Reasons of non-recovered deceased hearts among eligible donors consented for heart donation in 2020

Table 2.3.2.4 Adult and pediatric deceased heart transplantation

Liver Transplant Center	Adult ≥15 years	Pediatric ≤14 years	Total
King Faisal Specialist Hospital & Research Center Riyadh	12	8	20
Prince Sultan Military Medical City Riyadh	8	0	8
Total	**20**	**8**	**28**

Adult and pediatric deceased heart transplantation in currently active national heart transplant centers in 2020

2.3.2.4 Deceased donor-recipient matching

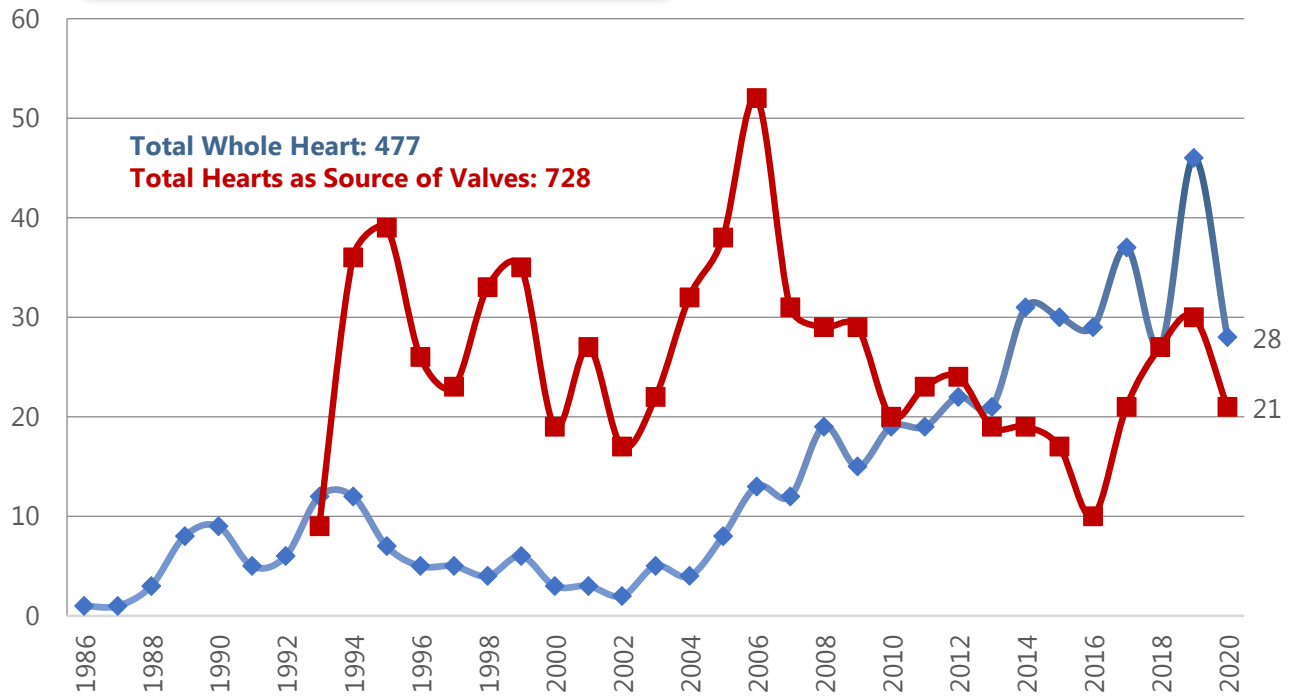
Matching sex was done in 20 (71%) of the cases and matching blood group for heart transplantation between deceased donors and recipients was done in 22 (79%) of the cases. Age distribution between deceased heart donors and recipients are shown in table 2.3.2.5.

Table 2.3.2.5: Age distribution between deceased heart donor and recipients 2020

Donor Age (yrs.)	Recipient Age (yrs.)						Total
	<5	5-15	16-29	30-50	51-65	>65	
<5	1						1
5-15		1	1				2
16-29		1	1	3			5
30-50		6	0	9	3	1	19
51-65	0			1			1
Total	**1**	**8**	**2**	**13**	**3**	**1**	**28**

Cumulative deceased heart transplantation and recovered hearts as source of valves in Saudi Arabia 1986-2020

Figure 2.3.2.1



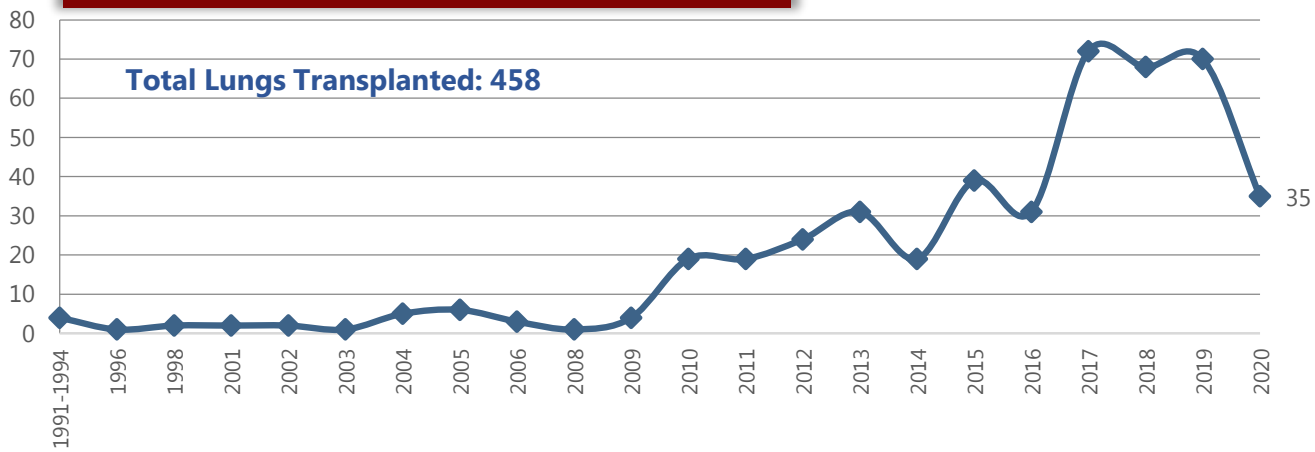
Organ Transplantation in the Kingdom of Saudi Arabia

2.4 Lung Transplantation

In the year 2020, 35 lungs was transplanted from deceased donation inside the Kingdom of Saudi Arabia. It is worth mentioning that a total of 458 lungs have been transplanted from 1991-2020. Illustration of the cumulative deceased lung transplantation is shown in figure 2.4.1

Cumulative deceased lung transplantation 1991-2020

Figure 2.4.2.1



2.4.1 Deceased Lung Donation 2020

74 deceased donors were consented for deceased organ donation and (100%) were consented for lung donation. Of the consented donors 72 donors were consented and offered to KSA, with 50 donors from KSA and 22 were from other GCC countries. Total utilized from the consented lung donor were 19, including 6 donors from GCC; Non-recovered donors were 53 including 16 donors from GCC countries(see figure 2.4.1.1). The details of the utilized lung donor characteristics are listed in table 2.4.1.1

Figure 2.4.1.1 Lungs from deceased donation 2019

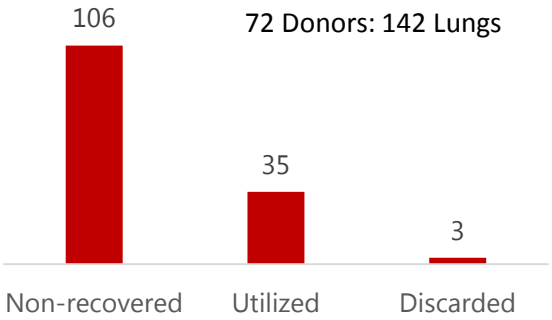


Table 2.4.1.1 Deceased Lung Donor Characteristics 2020

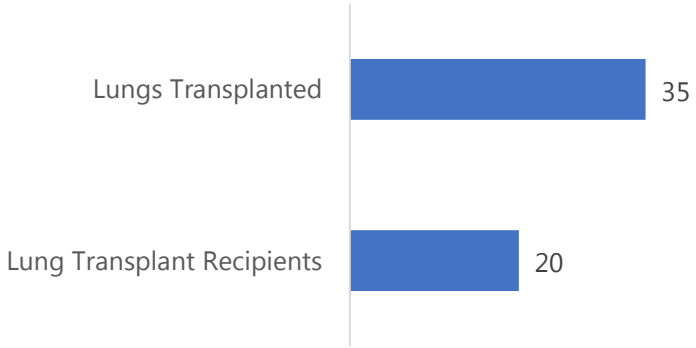
Characteristic	N	%
Age		
11-20	1	5%
21-30	3	16%
31-40	4	21%
41-50	8	42%
51-60	3	16%
Blood Group		
A	5	26.5%
B	5	26.5%
AB	1	5%
O	8	42%
Gender		
Male	15	79%
Female	4	21%
Cause of Death		
Anoxia	2	11%
Cerebrovascular/Stroke	12	63%
Head trauma	5	26%
CNS Tumor	0	
Other	0	
Circumstance of Death		
MVA	3	16%
Non-MVA	16	84%

Characteristics utilized deceased lung donors 2020

2.4.2 Deceased Lung Transplantation

148 deceased lungs were consented for the purpose of transplantation of which 35 (24%) lungs were transplanted of which, 30 lung were transplanted as double lung tx to 15 recipients; 3 single lung transplant and 2 lungs from 1 donor were transplanted to 2 recipients. The deceased lung transplantations this year was performed by King Faisal Specialist Hospital & Research Center, Riyadh the currently active lung transplant center in the Kingdom (see Figure 2.4.2.1).

Figure 2.4.2.1 Deceased Lung Transplantation

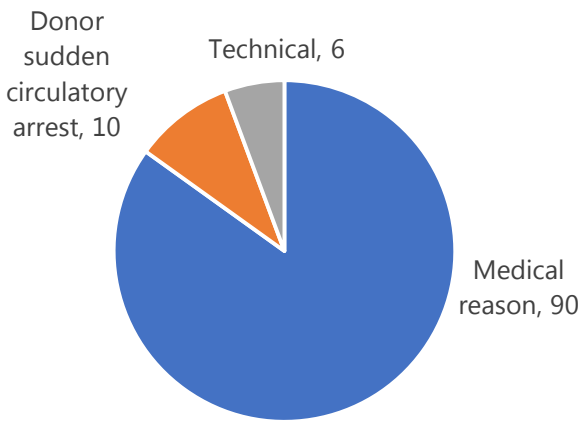


Performance of deceased lung transplantation in currently active national lung transplant center in the year 2020

2.4.2.1 Non-recovered deceased lungs

148 deceased lungs were consented for lung transplantation; out of which 106 lungs (72%) were non-recovered (see table 2.4.2.1.1). The major causes of non-recovered deceased lungs is shown in figure 2.4.2.1.1)

Table 2.4.2.1.1 Major causes of non-recovered lungs



53 donors: 106 Lungs

The reasons of non-recovery of lungs among eligible donors consented for lung donation 2020

Table 2.4.2.1.1 Reasons of non-recovered deceased lungs

Reasons of Non-Recovery	N	%
Infection	**30**	**28%**
• Purulent secretions during bronch	*12*	
• Pneumonia	*10*	
• Heavy bacterial growth, lung consolidation	*2*	
• COVID-19 Positive	*2*	
• Viral Meningitis	*2*	
• Sepsis	*2*	
Diseased Lungs	**28**	**26%**
• Bad C-xray, poor air exchange	*12*	
• Lung Consolidation	*4*	
• Lung embolism	*2*	
• Emphysematous, suspicious malignancy	*2*	
• Bad lung after exploration	*2*	
• Lung bleeding	*2*	
• Bilateral LL collapsed	*2*	
• Emphysema	*2*	
Poor lung function	**2**	**2%**
• Marginal Lung Donor	*2*	
No available suitable lung recipient	**26**	**25%**
• No ABO compatible recipient	*18*	
• No available suitable recipient Pediatric	*4*	
• No available suitable recipient Old age	*2*	
• Donor-recipient size mismatched	*2*	
Technical	**6**	**6%**
• Recipient don't want to be transplanted	*4*	
• Recipient unfit for transplant (bleeding)	*2*	
Donor sudden cardiac arrest	**10**	**9%**
Traumatic Lung Injury	**4**	**4%**
• Severe chest trauma	*4*	
Total	**106**	**100%**

Reasons of non-recovered of lungs among eligible donors consented for lung donation in 2020

2.4.2.2 Discarded Lungs

148 deceased lungs were consented for lung donation; out of which, 3 (2%) were discarded (see table 2.4.2.2.1)

Table 2.4.2.2.1 Reasons of discarded deceased lungs

Reason of discard	N
Right Lung Infiltration	1
Left lung with pus	1
Single lung transplant	1
Total	3

Discarded lungs among actual deceased lung donors in 2020

2.4.2.3 Adult and pediatric lung transplantation

35 deceased lungs were transplanted to 20 adult recipients with age raging from 15-65 years old inside the kingdom. (see table 2.4.2.3.1).

Table 2.4.2.3.1 Adult and Pediatric Lung Transplantation

Adult and Pediatric Lung Transplant	Adult		Pediatric	
	Single	Double	Single	Double
King Faisal Specialist Hospital & Research Center-Riyadh	5	15	0	0

Adult and pediatric deceased lung transplanted in currently active national lung transplant center in 2020

2.4.2.4 Cold ischemia time (CIT)

CIT for the 35 deceased transplanted lungs was ranging from 2 hours and 45 minutes to 8 hours with mean CIT of 5 hours and 20 minutes. Of which, 23 (66%) lungs were transplanted with CIT of ≤ 6 hours and 12 (34%) were transplanted with CIT of > 6 hours.

2.4.2.5 Deceased donor-recipient matching

Matching sex was done in 14 (70%) of the cases and matching blood group for lung transplantation between deceased donors and recipients was done in 20 (100%) of the cases. Age distribution between deceased lung donors and recipients are shown in table 2.4.2.5.1.

Table 2.4.2.5.1.: Age distribution between deceased lung donor and recipients 2020

Donor Age (yrs.)	Recipient Age (yrs.)						Total
	<5	5-15	16-29	30-50	51-65	>65	
<5	0	0	0	0	0	0	0
5-15				1			1
16-29			1	2			3
30-50	0	1	2	8	2		13
51-65				2	1		3
>65							0
Total		1	3	13	3	0	20

Adult and pediatric deceased lung transplanted in currently active national lung transplant center in 2020

Table 2.4.2.2 Deceased lung Transplantation Activity 1991-2020

Center	Period	Single Lung	Double Lung*	Total Lungs	Recipient
KFH-Jeddah	1991-1994	4	0	4	4
KFSH-Jeddah	2001-2010	8	8	16	12
KFSH-Riyadh	1996-2020	36	402	438	237
Total	**1991-2020**	**48**	**410**	**458**	**253**

*double lung transplant operation is counted as 2 lungs per transplant

Organ Transplantation in the Kingdom of Saudi Arabia

2.5 Pancreas Transplantation

In the year 2020, 2 pancreases was transplanted inside the kingdom of Saudi Arabia with a total of 82 pancreases transplantation done from 1990-2020. It is worth mentioning that the first pancreas transplantation in the Kingdom was performed in 1990 then followed by kidney-pancreas transplantation in 1991. Another combined operation was also done in 1992 at Al Shati Hospital in collaboration with King Abdul-Aziz Hospital-Jeddah. Illustration of the cumulative deceased pancreas transplantation is shown in figure 2.5.1.

Cumulative Deceased Pancreas Transplantation **Figure 2.5.1**

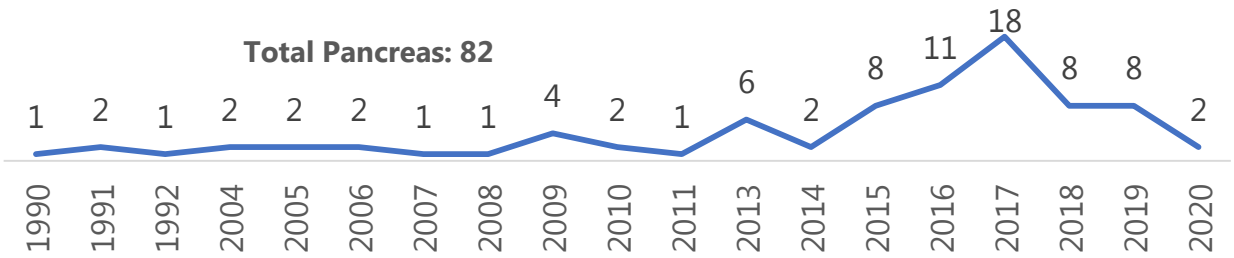
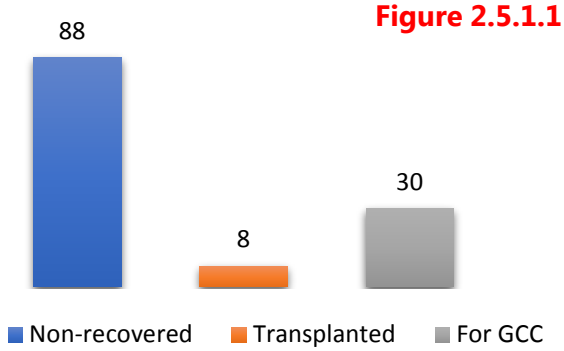


Table 2.5.1.1 Deceased pancreas donor characteristics

Characteristic	N	%
Age		
1-10		
11-20	1	50%
21-30		
31-40	1	50%
41-50		
51-60		
Blood Group		
A		
B	2	100%
AB		
O		
Sex		
Male	2	100%
Female		
Cause of Death		
Anoxia	1	50%
Cerebrovascular/Stoke	1	50%
Head Trauma		
CNS Tumor		
Others		
Circumstance of Death		
MVA		
Non-MVA	2	100%

Pancreas from Deceased Donors inside the Kingdom 2020

Figure 2.5.1.1



*Pancreas for GCC- other donor organs (e.g. liver, heart, lungs) were offered or shared to KSA except the Pancreas.

2.5.1 Deceased Pancreas Donation 2020

74 deceased donors were consented for deceased organ donation with 72 (97%) were consented for pancreas donation; (see figure 2.5.1.1); Of the consented 72 donors, 48 donors were from KSA and 24 were from other GCC countries. 50 pancreas donors were consented for KSA including 2 offered from GCC countries, to which 3 pancreas donor were recovered and 2 donors were utilized and 1 was discarded. (See table 2.5.1.1 for Characteristics of utilized pancreas donor characteristics).

2.5.2 Deceased Pancreas Transplantation 2020

2 pancreases were transplanted inside the Kingdom of which were transplanted as Simultaneous Kidney-Pancreas. (See table 2.5.2.1).

Hospital Name	PTA	SKP
King Faisal Specialist Hospital & Research Center-Riyadh	0	2
Total	0	2

Table 2.5.2.1: Deceased pancreas transplantation 2020

2.5.2.3 Non-recovered Deceased Pancreas 2020

A total of 50 consented pancreas donors were offered to KSA, 47 of which were not recovered. Reason for non-recovered pancreas are shown in table 2.5.2.3.1

Reasons of Non-Recovery	N	%
Determined unsuitable pancreas donor	**25**	53%
High Pancreatic Enzymes	9	
DM, HTN, DM with HTN	6	
Old Age, HTN	7	
Old Age, Infection, Long ICU stay	2	
History of Cardiac Arrest	1	
Marginal donor		
No available suitable recipient	**11**	24%
No ABO compatible recipient	4	
No available PTA recipient	4	
Cross-matched Positive	1	
High DSA	1	
Donor recipient size mismatched	1	
Macroscopic Findings	**3**	6%
Rigid and Fatty pancreas	1	
Edematous pancreas	1	
Not Transplantable	1	
Donor sudden cardiac arrest	**2**	4%
Infection	**6**	13%
Long ICU stay	1	
Sepsis	1	
Hbcore +ve	1	
COVID 19 +ve	1	
HbsAg +ve	1	
CSF suggestive of viral meningitis	1	
Total	**47**	**100%**

Table 2.5.2.3.1: Reasons for non-recovered deceased pancreas

Table 2.5.2.3.2: Major causes of non-recovered deceased pancreas 2020

Not recovered	N	%
Medical reason	45	96%
Donor sudden cardiac arrest	2	4%
Total	47	100%

The reasons of non-recovery of pancreas among eligible donors consented for pancreas donation in 2020

2.5.2.2 Adult and Pediatric Pancreas Transplantation

N	Hospital Name	Adult	Pediatric
1	King Faisal Specialist Hospital & Research Center-Riyadh	2	0
2	King Fahad Specialist Hospital Dammam	0	0
	Total	2	2

Table 2.5.2.2.1 Adult and pediatric deceased pancreas transplantation
Adults and paediatric pancreas transplantation in currently active pancreas transplant center in 2020

2.5.3.1 Discarded Pancreas

A total of 50 consented pancreas donors were offered to KSA, 3 Pancreas donor were recovered of which 1 pancreas was discarded table 2.5.3.1

N	Hospital Name	Discarded pancreas	Reason
1	King Faisal Specialist Hospital & Research Center-Riyadh	1	Hematoma

Table 2.5.3.1.1 : adult and paediatric deceased pancreas transplantation
Adults and paediatric pancreas transplantation in currently active pancreas transplant center in 2020

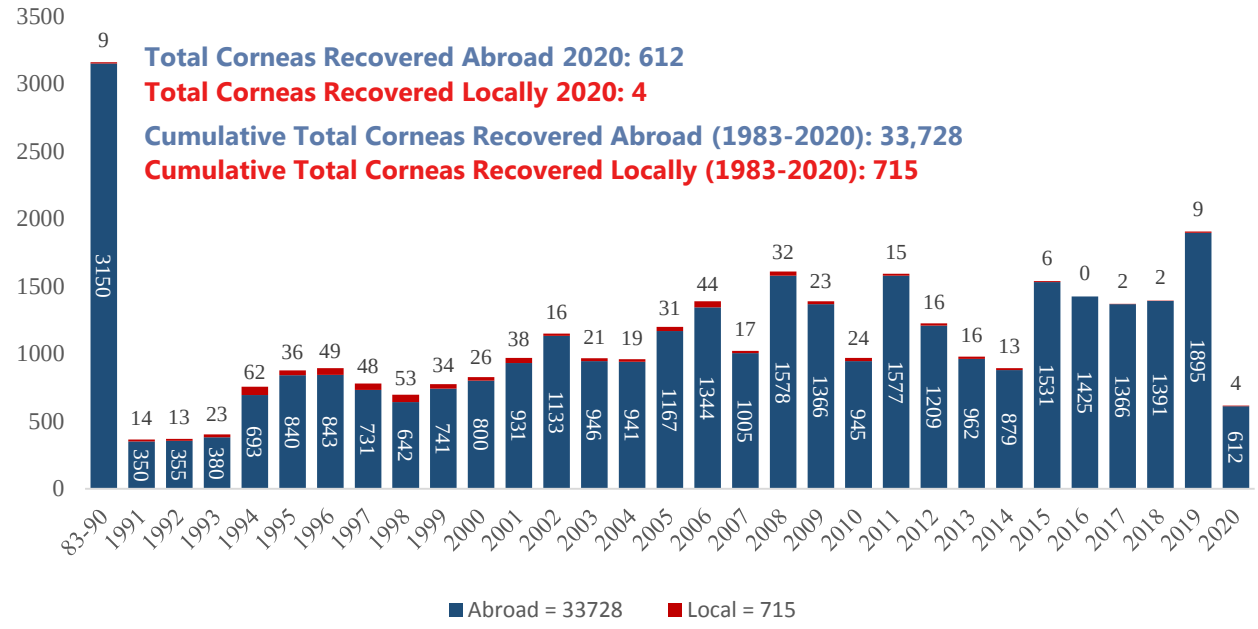
Organ Transplantation in the Kingdom of Saudi Arabia

2.6.1 Corneal Recovery &
2.6.2 Bone Banking

Corneal tissue donation and transplantation program was established in the kingdom in 1983. Corneal recovery were usually done along with multi-organ retrieval procedure from actual DBD donors. In the year 2020, four (4) corneas were locally recovered from deceased organ donors and this year a total of 715 corneas from deceased donors inside the kingdom from 1983-2019. Illustration of cumulative corneal recovery is shown in figure 2.6.1.1

Corneas used in the Kingdom were mostly procured abroad mostly from the USA. It is worth that there are 10 corneal transplant centers including 3 centers with corneal bank. A total of 612 corneas were imported King Khalid Eye Specialist Hospitals in addition to 4 recovered corneas from deceased donors.

Figure 2.6.1.1 **Corneal Recovery in KSA**



Details of the deceased corneal recovery in the Kingdom of Saudi Arabia 1983-2020

2.6.1 Deceased corneal donation 2020

74 deceased donors were consented for the purpose of organ donation; of these donors, 13 (18%) have consented for corneal donation of which 4 corneas were recovered from 2 deceased corneal donors, all donors were from KSA. Corneal recovery was performed by by King Khalid Eye Specialist Hospital. (see table 3.6.3 Reasons for Non-recovered deceased corneas in KSA.

Non-Recovered Deceased Corneas

13 deceased corneal donors (N=26 corneas) were consented for corneal donation, of which, only 4 corneas were recovered from 2 corneal donors and the remaining 22 corneas from 11 deceased donors were not recovered (see table for reason of non-recovered corneas 2.6.1.1).

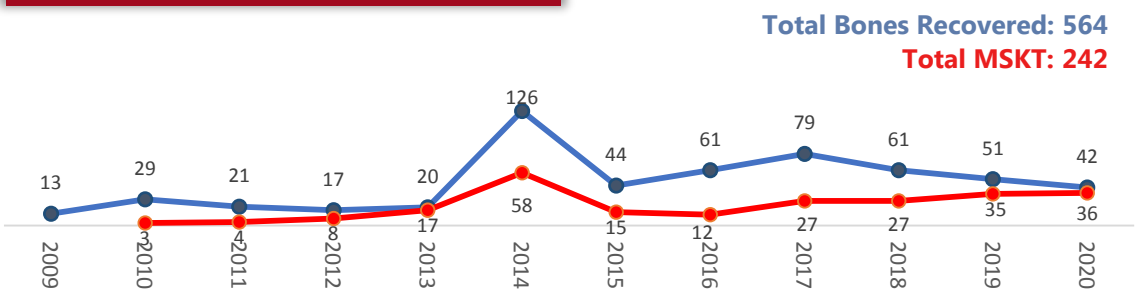
Table 2.6.1.1 Reasons for non-recovered deceased corneas

Reasons of Non-Recovery	Corneas	N=cornea	%
Infection		**14**	**64%**
MRSA positive	6		
HbCab positive	4		
HCOV 229e	2		
Unknown cause of meningitis	2		
Determined Unsuitable corneal Donor		**4**	**18%**
Small Crystal dots on corneas	2		
Young age <6 yrs	2		
Technical		**2**	**9%**
Curfew implemented during COVID-19	2		
Donor Sudden Cardiac Arrest	2	**2**	**9%**
Total		**22**	**100%**

Reasons of non-recovered deceased corneas in KSA among eligible donors consented for corneal in 2020.

Bone donation program from deceased donors was started in the Kingdom by King Faisal Specialist Hospital & Research Center in 2009. In the year 2020, 42 bones and 36 musculoskeletal tissues were recovered inside the Kingdom of Saudi Arabia. It is worth mentioning that 564 bones and 242 musculoskeletal connective tissues (MSKT) were recovered for the purpose of bone allograft. Illustration of the cumulative recovered deceased bones and musculoskeletal tissues is shown in figure 2.6.2.1.

Cumulative Recovered Deceased Bones and Musculoskeletal Tissues, 2009-2020 **Figure 2.6.2.1**



2.6.2.1 Deceased Bone Donation 2020

74 deceased donors were consented for organ donation; of which 11 (15%) were consented for bone and MSKT. Wherein, 9 (82%) donors were recovered 2 donors (18%) bones were not recovered. The details of the recovered deceased bone and MSKT donors characteristics are listed in table 2.6.2.1.1 and details of collected bones and MSKT in fig. 2.6.2.1.1.

Characteristic	N	%
Age		
10-20	0	0%
21-30	1	11%
31-40	2	22%
41-50	4	45%
51-60	2	22%
Blood Group		
A	4	44.5%
B	1	11%
AB	0	0%
O	4	44.5%
Gender		
Male	9	100%
Female	0	0%
Cause of Death		
Anoxia	2	22%
Cerebrovascular/Stroke	5	56%
Head trauma	2	22%
CNS Tumor	0	0%
Others	0	0%
Circumstance of Death		
MVA	2	22%
Non-MVA	7	78%

Table 2.6.2.1.1 Characteristics of Deceased Bone & MSKT donors

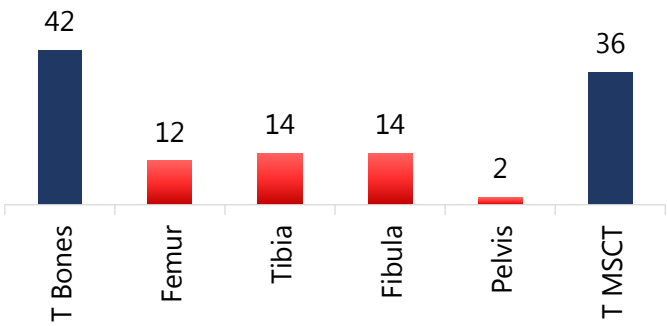
2.6.2.2 Non-recovered bones

11 deceased donors were consented for bone donation and of which, 2 (17%) were not recovered see (see table 2.6.2.1.2).

Reasons of Non-Recovery	N	%
Medical Reasons:	2	100%
Infection: Unknown cause of Meningitis	1	
Donor is too young (3 years old)	1	
Total	2	100%

Table 2.6.2.1.2 Reasons of non-recovered bones

Performance of deceased bone and MSKT recovery in currently active national bone bank in 2020 **Figure 2.6.2.1.1**



Organ Transplantation in the Kingdom of Saudi Arabia

2.7 Intestinal Transplantation

Intestinal or small bowel transplantation program from deceased organ donors was initiated in the Kingdom during the year 2016 and it was first performed at King Faisal Specialist Hospital and Research Center (KFSH & RC) Riyadh. The first small bowel was utilized as a multi-visceral organ transplant (transplanted along with liver and pancreas) and to date, a total of 8 intestinal transplantation was performed in the Kingdom.

It is worth mentioning that the first donor for small bowel donation in the Kingdom was from Prince Mohammed Bin Abdulaziz Hospital Riyadh. On February 7, 2016, a multivesicular transplantation was performed by KFSH & RC including the small bowel, liver and pancreas.

The first request for deceased intestinal transplantation was made by KFSH & RC, Riyadh in 2016.

The indications for isolated intestinal transplantation small bowel donation from KFSH & RC, Riyadh includes the following:

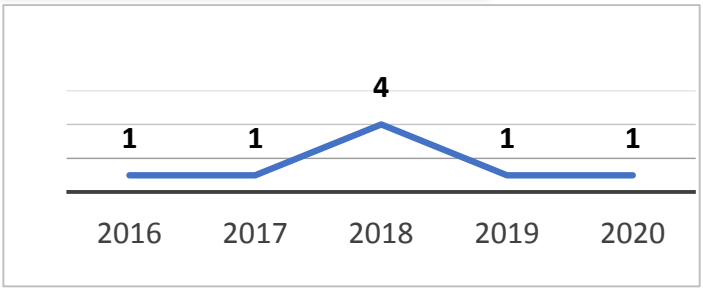
- Irreversible intestinal failure
- Total Parenteral Nutrition (TPN) or intravenous fluid dependency
- Necrotizing enterocolitis
- Congenital short bowel syndrome
- No or reversible TPN-induced liver disease (no bridging fibrosis or cirrhosis in histology)

Table 2.7.1 Types of Small Bowel Transplantation 2016-2020

Year	Type of Transplant	Organ Combination
2016	Multivisceral	Pancreas, Liver, Intestine
2017	Isolated	Small Bowel Only
2018	Isolated	Small Bowel Only
2019	Isolated	Small Bowel Only
2020	Isolated	Small Bowel Only

Cumulative deceased small bowel transplantation 2016-2020

Figure 2.7.1



Patients on life-long TPN with evidence of severe complications:

- Liver dysfunction
- Repeated infections (>2 times per year requiring hospitalization or one single mycotic sepsis)
- Difficult venous access for TPN or fluids (2 or more central veins thrombosed)

Frequent dehydrations episodes (2 or more hospital admissions annually) And, indications for multivesicular transplantation are as follows:

- Same details as above and
- Any form of bridging liver fibrosis/cirrhosis (porto-portal, porto-central or centro-central) or
- Anatomical or technical reason

Organ Transplantation in the Kingdom of Saudi Arabia

2.8 Organ Sharing between Kingdom of Saudi Arabia and GCC Countries 2020

In 2020, there were a total of 30 possible deceased donors reported to KSA from GCC of which 24 were consented for organ donation. From the consented deceased donors 38 organs were utilized inside the Kingdom including 5 kidneys, 11 livers, 10 whole hearts, and 12 lungs in addition to 2 hearts for Valves (HFV); details of the organs shared between KSA and GCC countries. Over the years, the successful cooperation in the organ sharing program between the GCC countries and the KSA yielded a total of 414 organs utilized by KSA in addition to 75 HFV were shared from Kuwait, Qatar, Bahrain, U.A.E. and Spain since 1996.

Table 2.8.1 Recovery and transplantation activities from organ sharing program between the Kingdom and other countries 1996-2020

Year	Recovered/Transplanted Organs*										Total		Tissues
	Kidney		Liver		Heart		Lung		Pancreas				HFV****
	Rec.	Tx.	Rec.	Tx.	Rec.	Tx.	Rec.	Tx.	Rec.	Tx.	Rec.	Tx.	Rec.
1996-2000	6	6	19	14	4	4	2	2			31	26	11
2001	13	12	3	3							16	15	1
2002	2	2	2	2							4	4	2
2004	6	6	6	5	1	1					13	12	4
2005	7	7	13	10	1	1	4	2			25	20	12
2006	6	3	12	8							18	11	7
2007	2	2	14	13	1	1					17	16	2
2008	6	5	12	11							18	16	
2009	2	2	5	5							7	7	1
2010	2	2	11	10							13	12	
2011	4	3	5	3	1	1					10	7	
2012	6	3	13	10			10	10			29	23	7
2013	2	2	5	6	2	2	4	4	1	1	14	15	
2014	8	8	21	20	5	5	4	4			38	37	7
2015	0	0	13	12	3	3	8	6			24	21	3
2016	2	2	13	10	3	3	12	12			30	27	1
2017	2	2	17	14	3	3	20	16	2	2	44	37	2
2018	5	5	5	5	4	4	10	10			24	24	3
2019	2	2	19	14	19	9	22	21			62	46	10
2020	5	5	12	11	12	10	12	12	0	0	41	38	2
Total	**88**	**79**	**220**	**186**	**59**	**47**	**108**	**99**	**3**	**3**	**478**	**414**	**75**

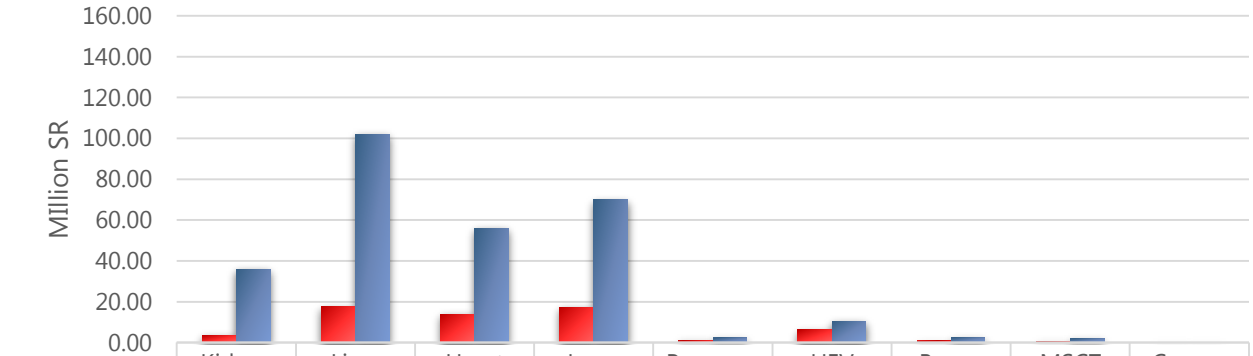
*Kuwait, Qatar, Bahrain and Spain; **Rec.: Recovered Organs; ***Tx.: Transplanted Organs, ****HFV: Heart for Valves

Table 2.8.2 Transplant activities from organ sharing program between the kingdom and other countries 1996-2020

Year	Country	Transplanted Organs					Total Organs	Tissues
		Kidney	Liver	Heart	Lung	Pancreas		HFV
1996-2002	Kuwait	3	19	4	2		28	14
2000-2001	Spain	17					17	
2004-2009	Kuwait	10	39	2	2		82	18
	Qatar	15	12	1				8
	Bahrain		1					
2010	Kuwait		5				12	
	Qatar	2	4					
	Bahrain		1					
2011	Kuwait	1	2	1			7	
	Qatar	2	1					
2012	Kuwait	1	9		10		23	7
	Qatar	2	1					
2013	Kuwait	2	6	1	2	1	15	
	Qatar			1	2			
2014	Kuwait	1	16	5	4		37	4
	Qatar	4	1					
	Bahrain	3	3					3
2015	Kuwait		10	2	6		21	2
	Bahrain		2	1				1
2016	Qatar	2					27	
	Kuwait		10	3	12			1
2017	Kuwait	2	13	3	12	1	31	1
	U.A.E.		1		4	1	6	1
2018	Kuwait	3	5	3	8		24	3
	UAE	2		1	2			
2019	Kuwait		11	8	17		36	10
	UAE	2	3	1	4		10	
2020	Kuwait	3	8	7	8	0	26	2
	UAE	2	3	3	4	0	12	
Total		**79**	**186**	**47**	**99**	**3**	**414**	**75**

Cost of organ and tissue utilized inside and outside the Kingdom in 2020 (Million SR)

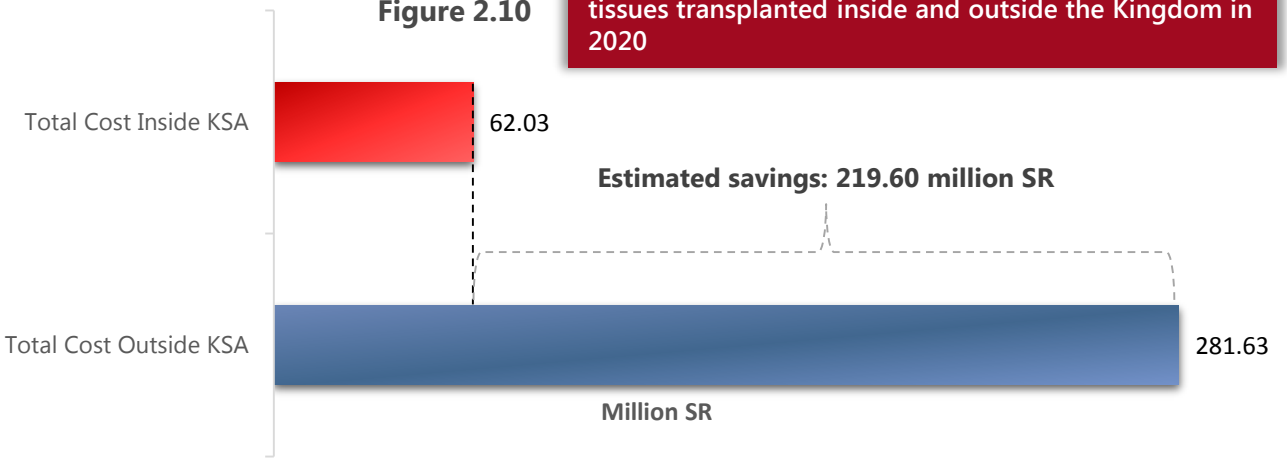
Figure 2.9



	Kidney	Liver	Heart	Lung	Pancreas	HFV	Bones	MSCT	Cornea
Cost Inside	3.60	17.85	14.00	17.50	1.20	6.30	0.84	0.72	0.02
Cost Outside	36.00	102.00	56.00	70.00	2.40	10.50	2.52	2.16	0.05

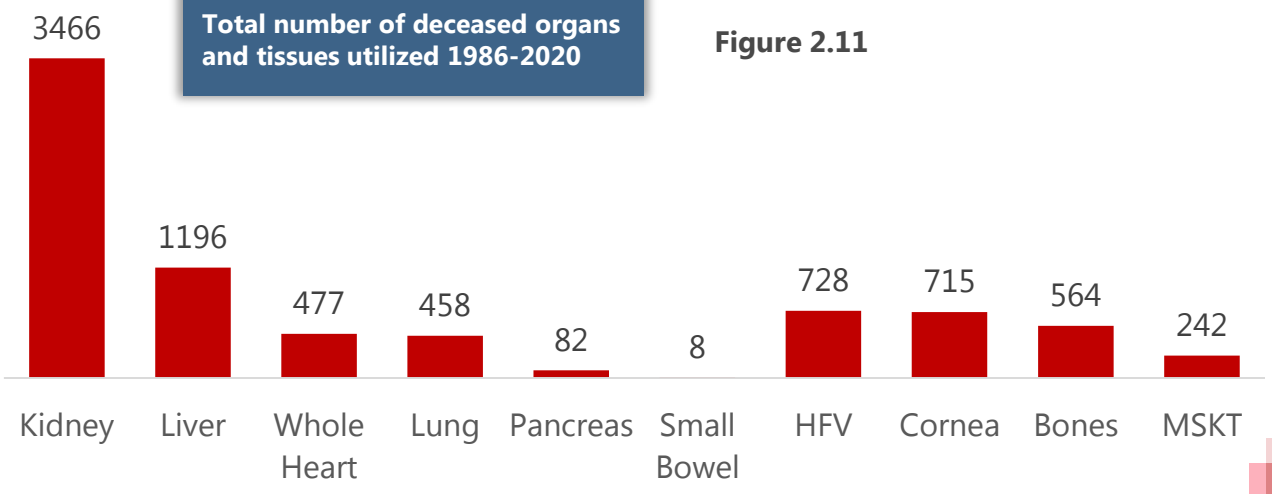
Figure 2.10

Comparison of estimated total cost of organs and tissues transplanted inside and outside the Kingdom in 2020



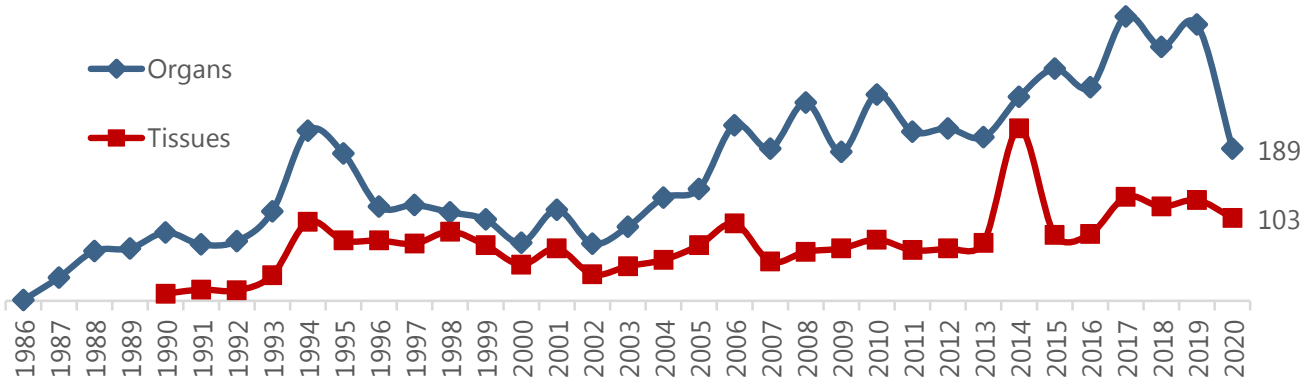
Total number of deceased organs and tissues utilized 1986-2020

Figure 2.11



Total number of deceased organs and tissues utilized 1986-2020

Figure 2.12



Total Organs (kidney, liver, heart, lungs, pancreas, small bowel)	**5,680**
Total Tissues (corneas, heart for valves, bones, musculoskeletal tissues)	**2,248**

The cost of transplantation for different organs (kidney, liver heart, etc.) and the amount of savings when comparing inside and outside the Kingdom in organ transplantation. (see fig. 2.10)

Dialysis in the Kingdom of Saudi Arabia

The Chapter of Dialysis (HD and PD) in the Kingdom of Saudi Arabia, will

- *Provide the list of all dialysis centers in the kingdom highlighting the manpower, number of patients and patient's characteristics.*
- *Provide an overview of the different of sectors providing dialysis treatments*
- *Highlights the causes of renal failure, their prevalence and incidence rate*
- *Provide a scientific prediction on average annual increased of patients on hemodialysis*

In, a total of 21,496 patients were on renal replacement therapy (HD and PD) with 19,715 patients on hemodialysis and 1,781 on peritoneal dialysis treatment. The patient prevalence rate were 621 pmp. New patients were 4,471 with an incidence rate of 132 pmp.

Provides each dialysis units data with comprehensive details such as number of staff and patients. It also includes the patient's demographic and characteristics such as age, sex, Nationality, blood group and vascular access.

Provides an overview of different dialysis sectors and each affiliation. Graphs and tables were made available that highlights important data such patients' characteristics, causes of renal disease and its prevalence rate, serology status (HCV, HBsAg and HIV).

Provides the centers overall structures with the total number of machines and outlets were highlighted per dialysis sectors and region wise. Treatment modalities were also recorded as well as the patients treated with erythropoietin.

Shows an important data of the overall renal replacement therapy in the kingdom, which includes, the HD, PD and numbers of patient who had renal transplant.

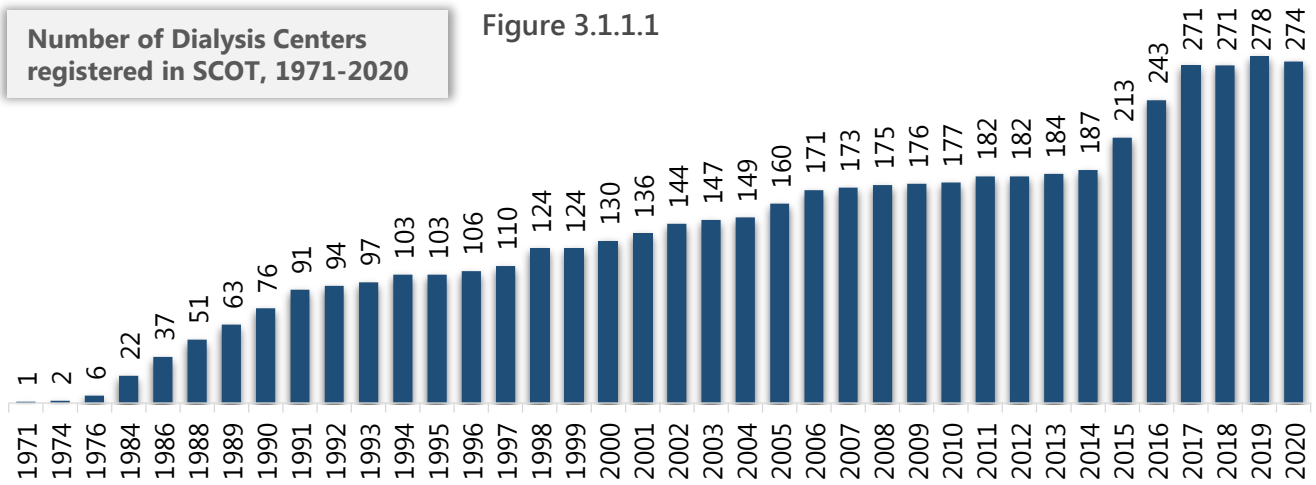
3.1 Hemodialysis in the Kingdom of Saudi Arabia

3.1.1 Hemodialysis Centers in Saudi Arabia

In 2020 there were a total of 274 dialysis centers registered in the Saudi Center for Organ Transplantation (SCOT). From these centers. A total of 19,715 chronic HD patients on hemodialysis and 5,089 new patients were recorded. The average net annual increase of patients on hemodialysis is 5% in the last 5 years.

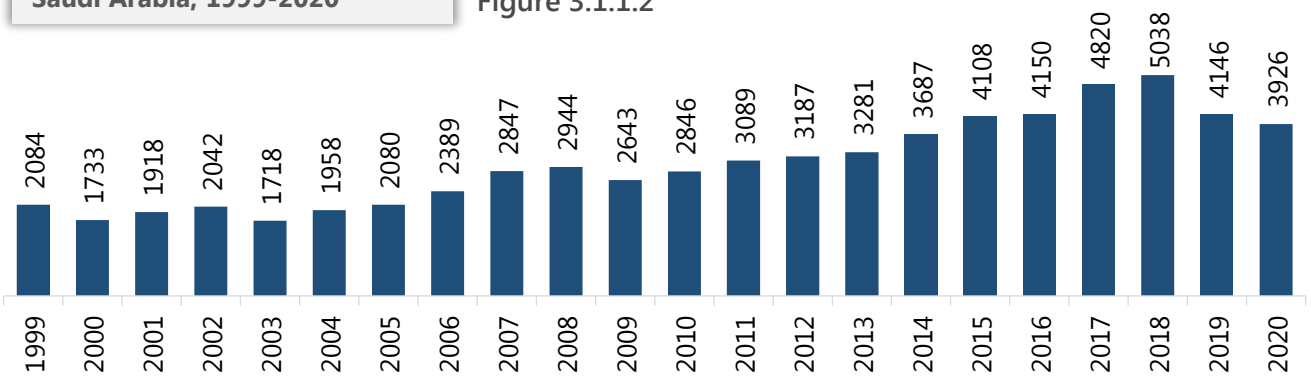
Number of Dialysis Centers registered in SCOT, 1971-2020

Figure 3.1.1.1



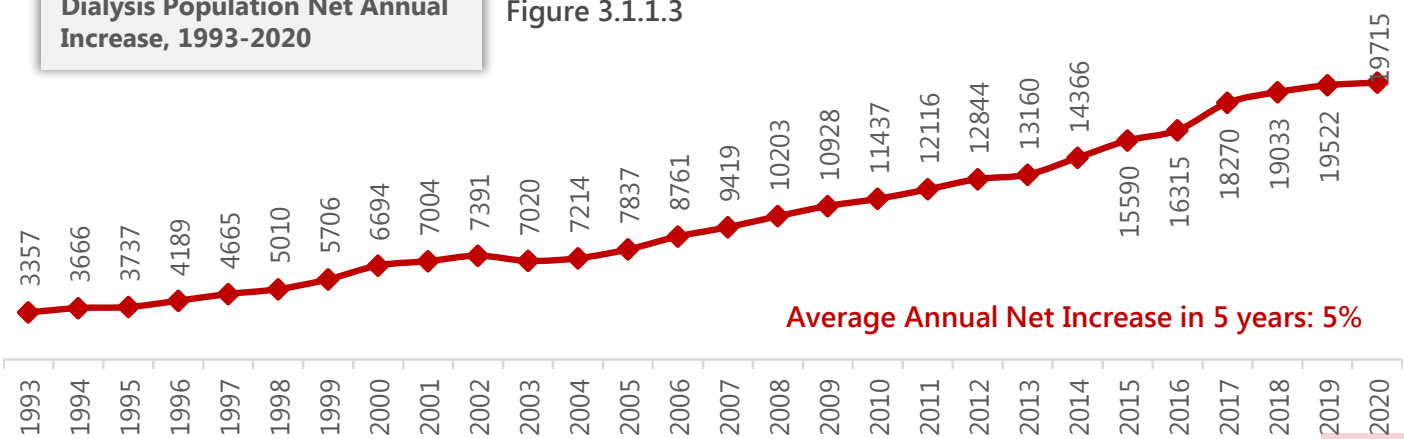
New Hemodialysis Patients in Saudi Arabia, 1999-2020

Figure 3.1.1.2



Dialysis Population Net Annual Increase, 1993-2020

Figure 3.1.1.3



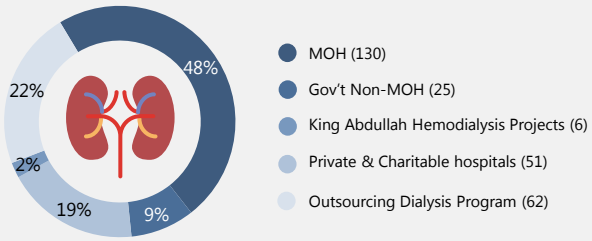
Hemodialysis in the Kingdom of Saudi Arabia

3.1.2 - Hemodialysis Patients and Staffing

MOH, MOH outsourcing hemodialysis Centers, Gov't-Non MOH, King Abdullah Projects and Private

In 2020, total of 274 dialysis centers were recorded and the number of their affiliated dialysis centers were categorized into five 5 sectors. MOH with 130 dialysis centers; MOH outsourcing centers, Diaverum 39 and Davita 23; Gov't Non-MOH 25, Private & Private Charitable centers 51; and King Abdullah Hemodialysis Projects 6 hemodialysis Centers see figure 3.1.2.1.

Figure 3.1.2.1 Hemodialysis Center and Affiliation 2020

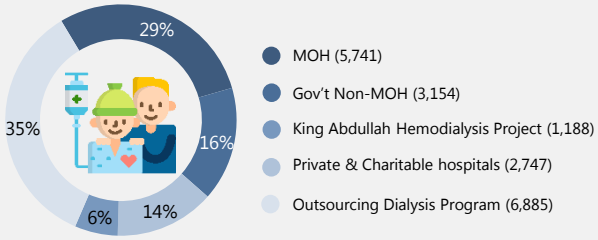


Total Centers: 274

Hemodialysis Patients (Number of Patients, Blood group, Age, Sex and Nationality)

A total of 19,715 permanent chronic hemodialysis patients were recorded in the Kingdom of which 3,926 were new chronic cases. These patients are dialyzing in 5 hemodialysis sectors in the Kingdom (See 3.1.2.2 for patients' distribution by each sector.).

Figure 3.1.2.2 Distribution of Chronic Homedialysis Patients by Dialysis Sector

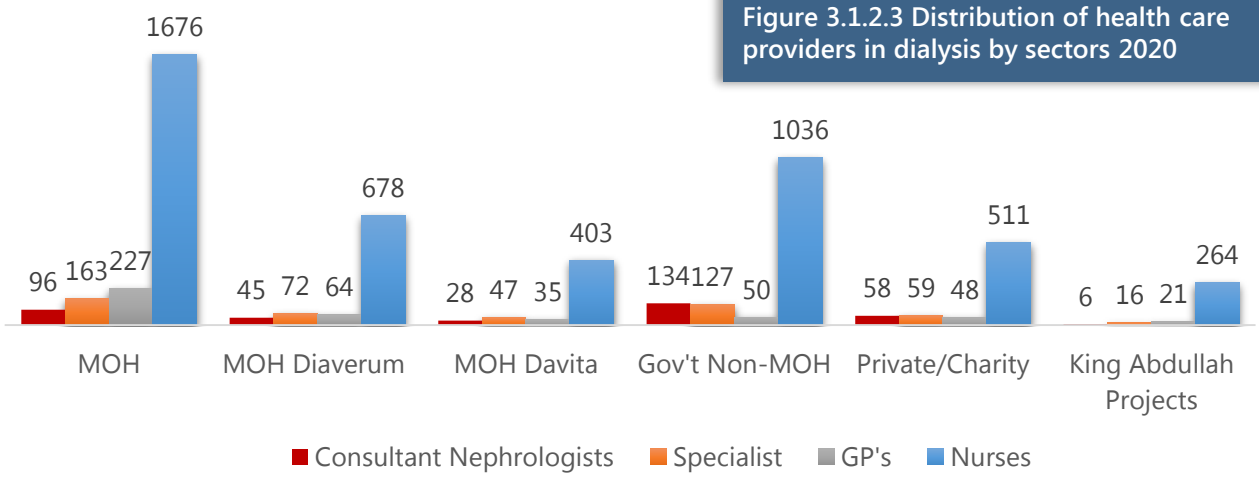


Total Patients: 19,715

Dialysis Health Care Providers (Consultant Nephrologist, Specialist, GP's and Nurses)

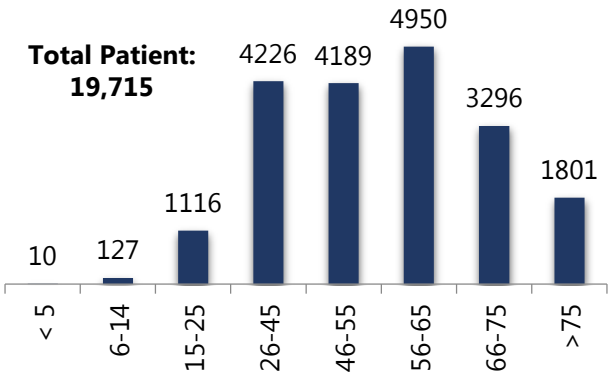
A total of 5,864 health care providers in the hemodialysis centers are in the Kingdom and were composed primarily of consultant nephrologists, specialist, general practitioners and nurses. Manpower were distributed in 5 sectors of hemodialysis centers all throughout the Kingdom. See figure 3.1.2.3 for the distribution of health care providers in dialysis sectors.

Figure 3.1.2.3 Distribution of health care providers in dialysis by sectors 2020



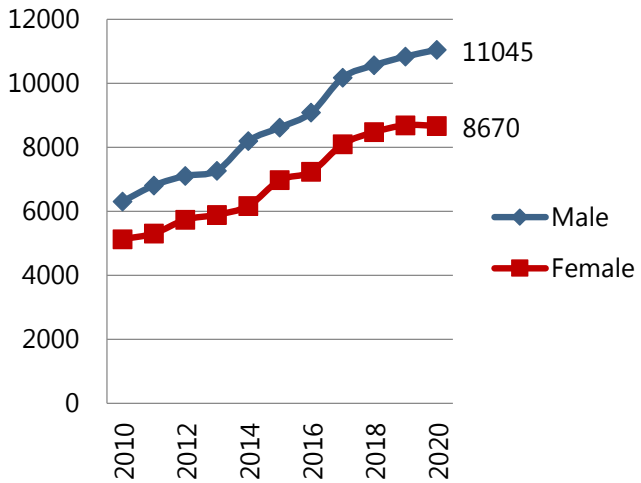
A total of 19,715 chronic patients were on hemodialysis, age group among hemodialysis patients have shown that the majority of dialysis patients were in the group of 26 to 65 years old, composing of (68%) of the total HD population. See figure 3.1.2.4 for age group distribution and figure 3.1.2.5 for age trend.

Figure 3.1.2.4 Age group distribution among hemodialysis patients 2020



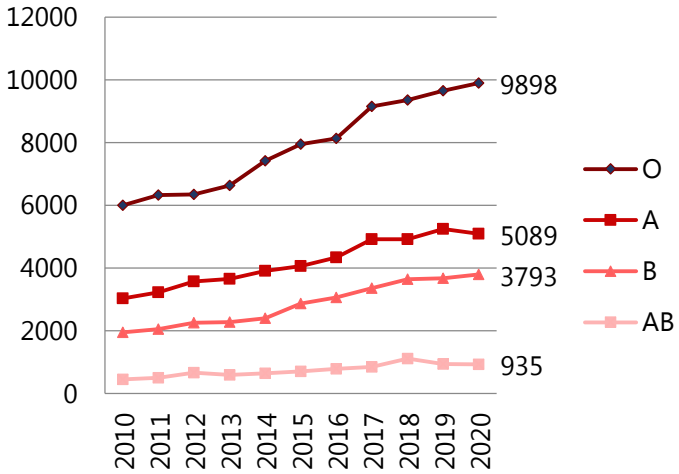
Sex distribution among hemodialysis patients have shown that (56%) of dialysis patients were male and (44%) were female. The same percentage of sex distribution was noted from the previous years. See figure 4.4.5 for sex distribution among HD patients.

Figure 3.1.2.5 Sex distribution among hemodialysis patients



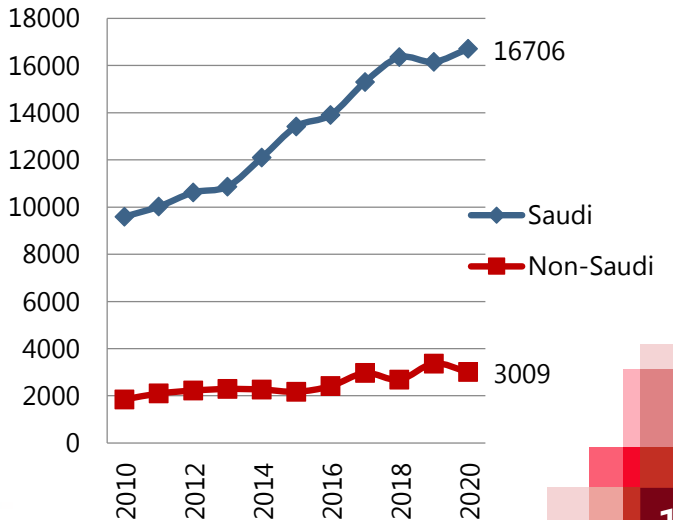
Blood group among hemodialysis patients were recorded and have shown that majority of patients were in the blood group O (50%), followed by A with (26%), B with (19%) and AB (5%) with the least number of patients. See figure 3.1.2.6 for trend of blood groups among hemodialysis patients.

Figure 3.1.2.6 Blood group among chronic hemodialysis patients 2020



Nationalities among hemodialysis patients were categorized between Saudis and non-Saudis wherein, Saudi patients composed the (85%) of total hemodialysis patients in the Kingdom and the remaining (15%) were composed of Non-Saudi patients (see fig. 3.1.2.7 Nationalities of Patient on HD).

Figure 3.1.2.7 Nationalities of Patients on HD



Hemodialysis in the Kingdom of Saudi Arabia

3.1.3 - Causes of Renal Disease and Active Serology

Causes of Renal Disease and Active Serology status (Causes of Renal Failure, Prevalence Rate of DM and HTN, Patient Serology and HCV PCR screening)

The causes of renal failure among hemodialysis patients were determined based on the cumulative data gathered from all the hemodialysis centers in the kingdom, the 2 main causes of end-stage renal disease among HD patients were diabetic nephropathy and the hypertensive nephropathy (See table 3.1.3.1 for Causes of renal Failure among HD patients and figure 3.1.3.3 for trends of major causes of renal failure).

Table 3.1.3.1 Causes of Renal Failure among HD patients 2020

Cause of Renal Failure	N	%
Diabetic Nephropathy	8294	42%
Hypertensive Nephropathy	6713	34%
Unknown Etiology	1693	9%
Glumerulonephritis	849	4%
Others	478	2%
Obstructive Uropathy	489	2%
Congenital Malformation	411	2%
Heredofamilial Disease	465	2%
Vasculitis	208	1%
Pregnancy Related	115	1%
Total	**19715**	**100%**

Figure 3.1.3.3 Trends of Major Causes of Renal Failure

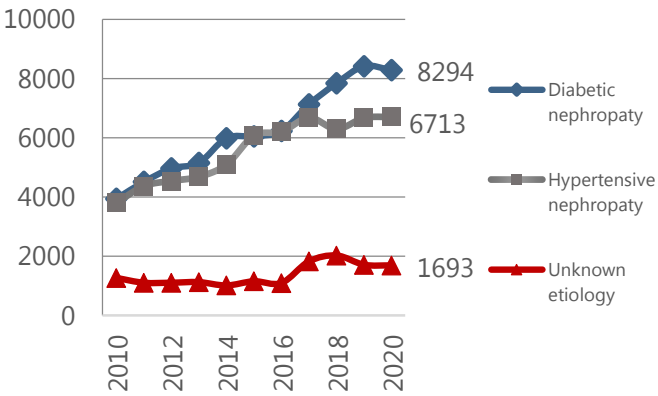
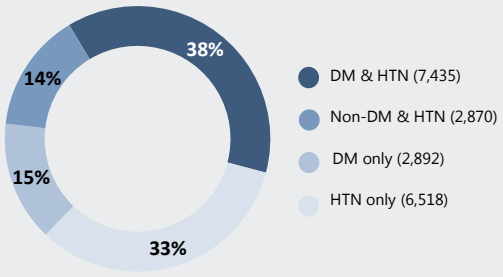
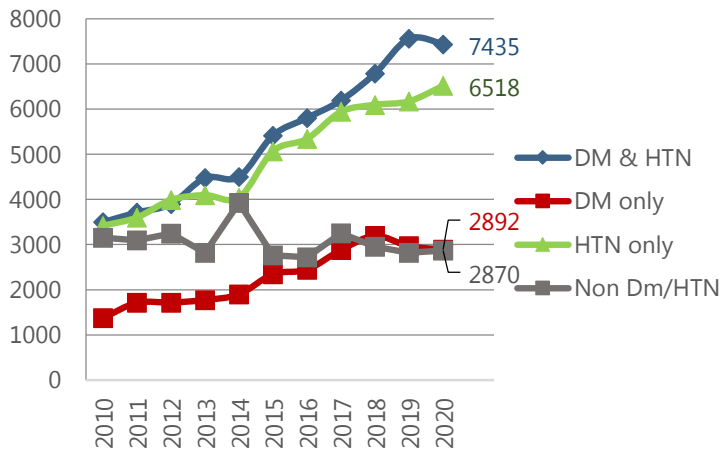


Figure 3.1.3.1 Prevalence of DM, HTN and Both DM & HTN



Total Patients: 19,715

Figure 3.1.3.2 Trend of Prevalence of DM, HTN and Both DM and HTN



The prevalence rate of Diabetes Mellitus (DM); Hypertension (HTN); and combined DM and HTN; on patients have shown that the highest rate were those with combined DM and HTN with 38%; followed by HTN only 32% and DM only at 15%. The prevalence trend on each category have shown an increasing trend in patients with combined DM and HTN, followed by HTN only patients which had slightly increased this year. On the contrary patients with DM only, had decreased this year compared to lasts year's record. See figure 3.1.3.2 for the trend of prevalence among HD patients with DM, HTN and both DM and HTN

Causes of Renal Disease and Active Serology status (Causes of Renal Failure, Prevalence Rate of DM and HTN, Patient Serology and HCV PCR screening)

Serology were annually monitored especially the HCV, HBsAg and HIV cases among the HD patients. The trend of each positive serology results have shown that patients who were HCV+ve has been in continuous decline over the last 4 years with 7% infection rate this year. HBsAg+ve patients has decreased from last year's number but maintain a 3% infection rate and patient's with HIV also have increased this year. See figure 3.1.3.4 for trend of serology positive patient, figure 3.1.3.6 for HCV+ve antibody patients, figure 3.1.3.5 for HCV+ve patients region wise and figure 3.1.3.7 HBsAg+ve antibody patients.

Figure 3.1.3.4 Trend of Serology Positive patients 2020

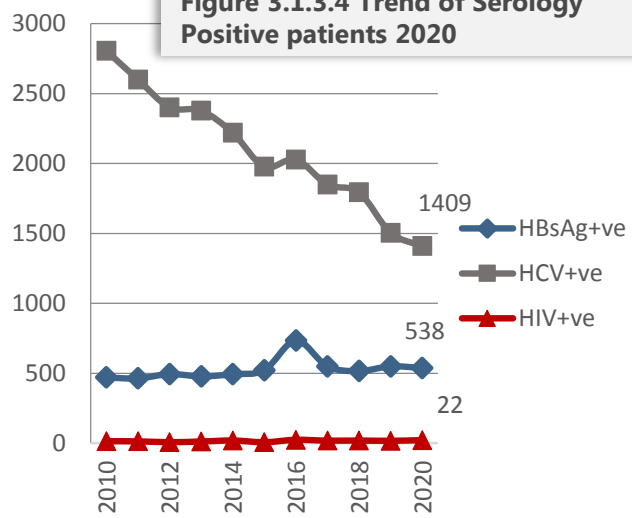
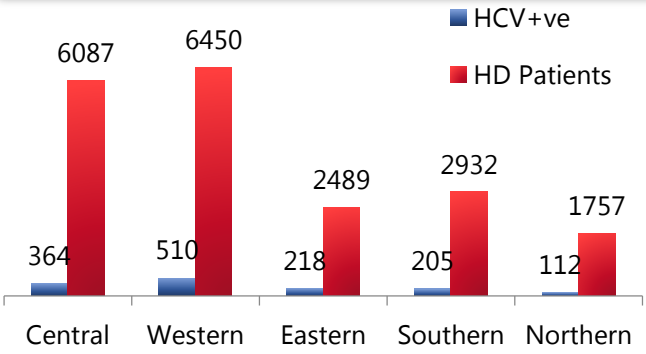


Figure 3.1.3.5 HCV+ve patients region wise 2020



Regions	HC+ve	HD Patients
Central	364	6087
Western	510	6450
Eastern	218	2489
Southern	205	2932
Northern	112	1757

Figure 3.1.3.6 HBsAg+ve antibody patients 2020

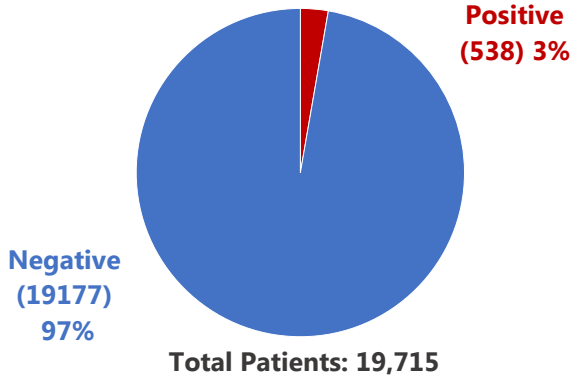
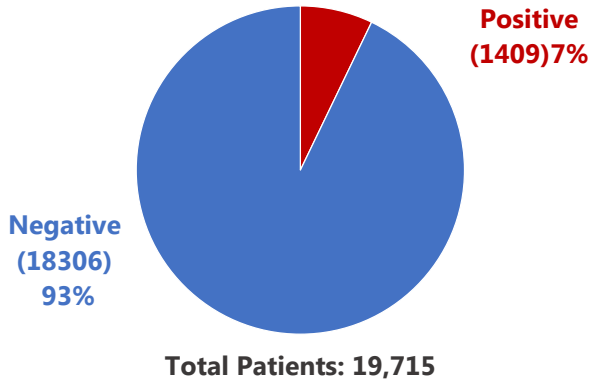


Figure 3.1.3.7 HCV+ve antibody patients 2020



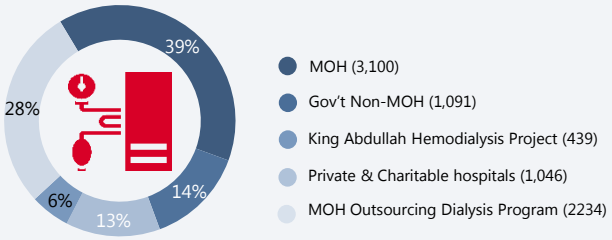
Polymerase Chain Reaction (PCR) of HCV positive patients were carried out by some dialysis centers. From which 256 (18%) of the 1,409 HCV+ patients were found to be HCV PCR positive.

Hemodialysis in the Kingdom of Saudi Arabia

3.1.4 - Machines, outlets and patient's quality care

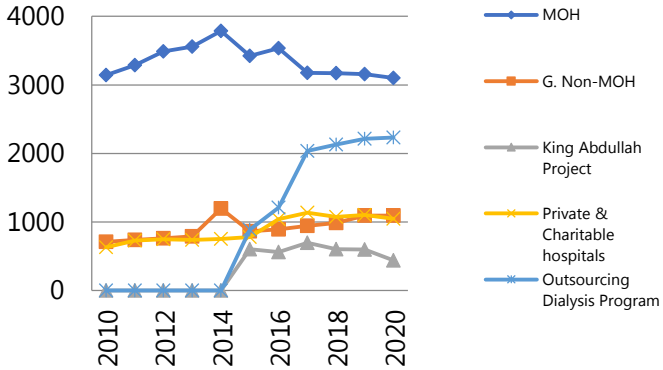
Hemodialysis machines being utilized in the Kingdom are composed of 7,910 machines which were distributed in 5 hemodialysis sectors in the Kingdom. See figure 3.1.4.1 for hemodialysis machines distribution by sector and fig 3.1.4.2 for Trends of dialysis machines distribution by sector.

Figure 3.1.4.1 Hemodialysis machines distribution by sector



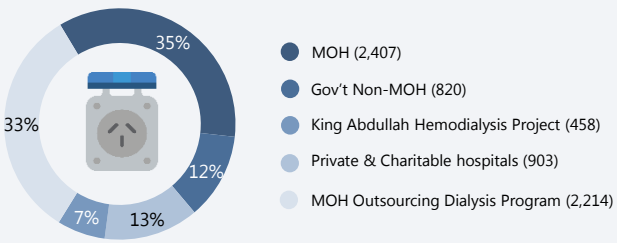
Total Machines: 7,910

Figure 3.1.4.2 Trends of hemodialysis machines distribution by sector



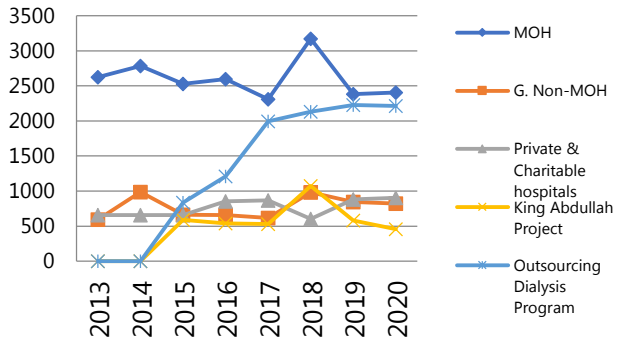
Outlets for hemodialysis centers were composed of 6,802 outlets for all sectors of hemodialysis in the Kingdom. See figure 3.1.4.3 for the hemodialysis outlet distribution and figure 3.1.4.4 for the trend of outlet distribution among the 5 hemodialysis sectors in the Kingdom.

Figure 3.1.4.3 Outlet distribution among hemodialysis sectors in the Kingdom



Total Outlets: 6,802

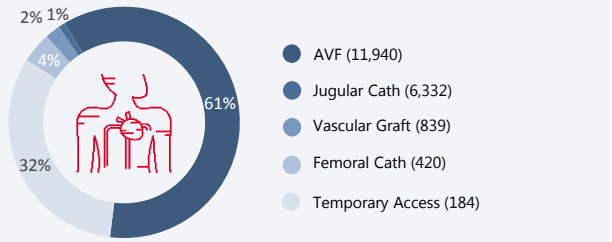
Figure 3.1.4.4 Trends of outlet distribution among hemodialysis sectors in the Kingdom



Modality of Treatment (Vascular Access, HD vs. HDF and Erythropoietin)

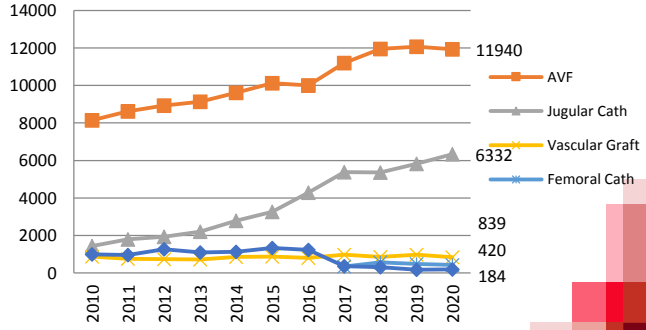
The most common site of vascular access is the (arteriovenousfistula) AVF with 61% of the total dialysis patients, followed by permanent jugular catheter with 32%, and femoral as the least used access with 2% (See figure 3.1.4.5 for Dialysis Vascular Access and figure 4.6.2 for trends of dialysis vascular access).

Figure 3.1.4.5 Hemodialysis vascular access



Total Dialysis Patients: 19,715

Figure 3.1.4.6 Trends of hemodialysis vascular access



In 2020, there were 279 hemodialysis centers inside the Kingdom. The MOH and the MOH outsourcing centers (Davita and Diaverum) have a total of 196 centers combined, followed by private & charitable institutions with 52 HD centers, Gov't Non-MOH with 25, and King Abdullah Hemodialysis Projects with 6 HD centers. (See table 3.1.4.1 and figure 3.1.4.7).

Table 3.1.4.1 Number of HD Pts., Centers & Machines in MOH & Non-MOH Hospitals 2020

	MOH Hospitals	MOH Outsourcing (Davita and Diaverum)	Military Hospitals	National Guard	University Hospitals	King Faisal Specialist Hospitals	Private & Charitable Hospitals	King Abdullah Project	Security	Other Hospitals
HD Centers: 279	134	62	11	4	3	2	52	6	1	4
HD Patients: 19,715	5,741	6,885	1,670	527	263	259	2747	1188	184	251
Machines: 7,910	3,100	2,234	541	154	104	145	1046	439	53	94
Outlets: 6,802	2,407	2,214	424	79	121	71	903	458	46	79
Pts./Outlets : 3.5	2.4	3	3.9	6.7	2.2	3.6	3	2.6	4	3.2

Figure 3.1.4.7 HD Pts. & Machines in MOH & MOH Outsourcing Hospitals according to Region 2020

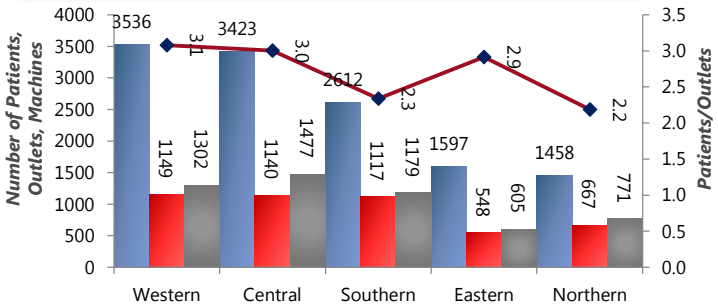


Table 3.1.4.2 Number of HD Pts., Centers & Machines in MOH & MOH Outsourcing by Region

	Western	Central	Southern	Eastern	Northern
Patients: 12.626	3536	3423	2612	1597	1458
Outlets: 4,621	1149	1140	1117	548	667
Machines: 5,334	1302	1477	1179	605	771
Pts/ Outlets: 2.7	3.1	3	2.3	2.9	2.2

Figure 3.1.4.8 HD Pts. & Machines in Non- MOH Hospital according to Sector 2020

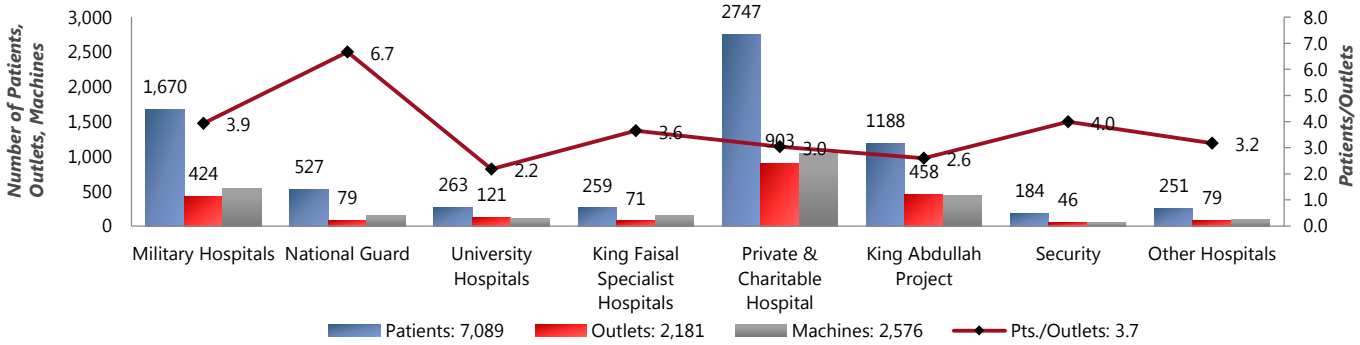
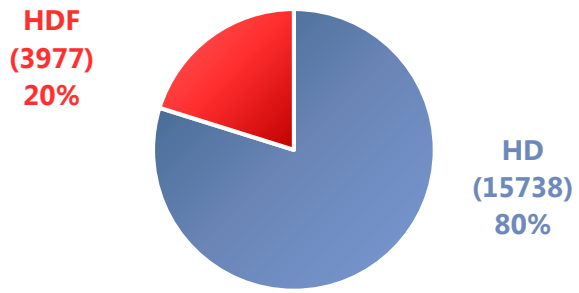


Table 3.1.4.3 Number of HD Pts., Centers & Machines in Non-MOH by Sector 2020

	Military Hospitals	National Guard	University Hospitals	King Faisal Specialist Hospitals	Private & Charitable Hospitals	King Abdullah Project	Security	Other Hospitals
Patients: 7,089	1670	527	263	259	2747	1188	184	251
Outlets: 2,181	424	79	121	71	903	458	46	79
Machines: 2,576	541	154	104	145	1046	439	53	94
Pts/Outlets: 3.7	3.9	6.7	2.2	3.6	3	2.6	4	3.2

Figure 3.1.4.9 HD and HDF treatment modality



Total Dialyzing Patients: 19,715

Hemodialysis is the most common modality use of treatment among the dialyzing patients, and hemodiafiltration (HDF) is gaining popularity among dialysis sectors. See fig. 3.1.4.9 of HD and HDF treatment modality

Erythropoietin treatment among HD patients was used in 15,084 patients, (77%) of the entire HD population. Over the years there was an increasing numbers of patients receiving EPO-r. See figure 3.1.4.10 for Patients receiving Erythropoietin by sector and figure 3.1.4.11 for Trend of Erythropoietin treatment.

Figure 3.1.4.10 Patients receiving Erythropoietin by sector

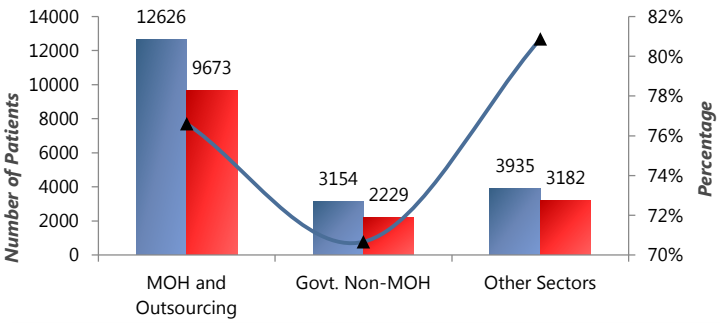
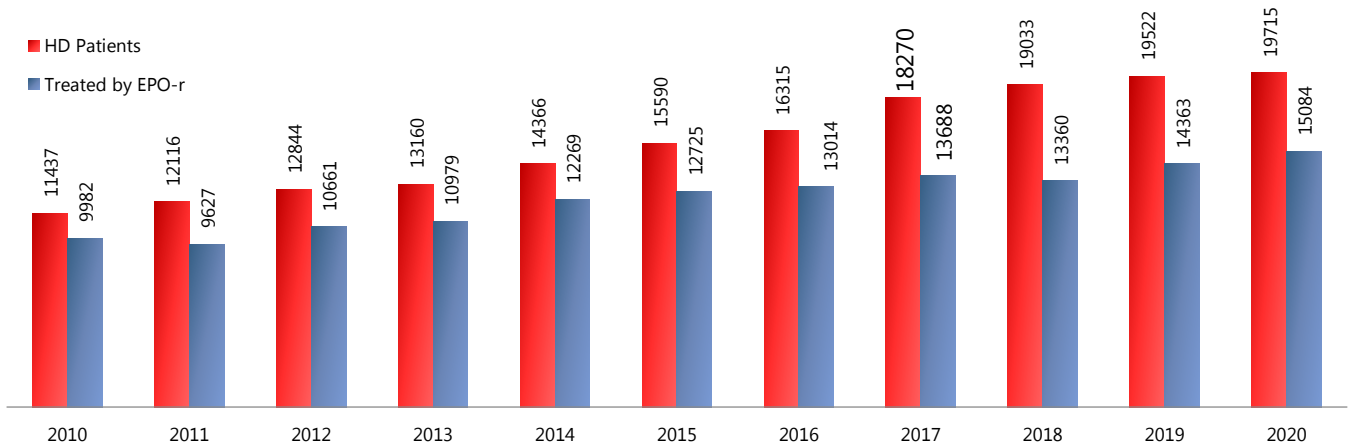


Figure 3.1.4.11 Number of receiving Erythropoietin by Sector

	MOH and outsourcing	Govt. Non-MOH	Other Sectors
Total HD Pt: 19,715	12,626	3,154	3,935
Treated by EPO-r: 15,084	9,673	2,229	3,182
Percentage: 74%	77%	71%	81%

Figure 3.1.4.11 Trend of patients receiving Erythropoietin by sector per year



Hemodialysis patient's quality care

Hemodialysis patient's blood were tested, these includes the following: Hemoglobin, albumin, pre-dialysis serum phosphorous and serum calcium levels. Medications such as patient's on Vitamin D, calcimimetics and non-calcium phosphate binders were also documented.

Table 3.1.4.4 Hemodialysis patients quality care management

Pre-dialysis serum phosphorous	N	%
Patients pre-dialysis phosphorous level >1.9 mmol/6 mg/dL	4,425	22%

Total HD patients: 19,715

Pre-dialysis serum calcium <2.1 mmol/L/8.4 mg/dL	N	%
Patients pre-dialysis calcium <2.1 mmol/L/8.4 mg/dL	3,740	19%

Total HD patients: 19,715

Patients Albumin Level <35 g/dL	N	%
Patients with <35 g/dL	2970	15%

Total HD patients: 19,715

Patients on Calcimimetics	N	%
Patients on calcimimetics	5,782	29%

Total HD patients: 19,715

Patients Hemoglobin Level g/dL	N	%
Hemoglobin level >12 g/dL	3,480	18%
Hemoglobin level <10 g/dL	3,516	18%

Total HD patients: 19,715

Patients on Non-calcium phosphate binders	N	%
Patients on Non-calcium phosphate binders	7,185	36%

Total HD patients: 19,715

Patients on Vitamin D	N	%
Vitamin D Injectable	3284	17%
Vitamin D Oral	9070	46%
Total HD patients: 19,715	**12,350**	**63%**

Hemodialysis in the Kingdom of Saudi Arabia

3.1.6 - Statistical Tables

Table 3.1.6.1 Hemodialysis Centers in Saudi Arabia MOH - Sector - Riyadh Region

No.	Dialysis Center Name	Consultant Nephrologists	Nephrology Specialists	Resident Doctor	Nurses	No. of Outlet Connections	Total No. of HD Machines	Total HD Pts.	No. of Follow up Tx. Pts
1	King Salman Center for Kidney Disease Riyadh	3	7	22	85	96	124	291	0
2	King Saud Medical City, Riyadh	8	11	8	98	56	99	276	270
3	King Khalid Hospital, Al Kharj	1	4	4	21	17	53	75	0
4	Dawadmi General Hospital	0	1	0	15	20	27	65	0
5	King Fahad Medical City, Riyadh	5	4	0	54	14	29	56	0
6	Al Aflaj General Hospital	0	1	1	11	24	32	54	0
7	King Khalid Hospital, Majma'ah	0	1	2	12	10	28	52	0
8	Wadi Dawasir General Hospital	0	3	2	9	17	17	49	0
9	Afif General Hospital	0	1	1	8	12	22	48	0
10	Al Qawaeyah General Hospital	6	1	1	7	17	24	43	0
11	Shagra General Hospital	0	3	1	11	11	21	42	0
12	Al Iman General Hospital	1	1	3	14	17	32	40	0
13	Al Zulfi General Hospital	0	0	1	12	13	24	38	0
14	Hotat Bani Tamim General Hospital	0	0	2	9	15	18	38	0
15	King Salman Hospital Riyadh	1	1	3	13	12	22	30	7
16	Hotat Sudair General Hospital	0	1	1	7	18	18	25	0
17	Al Muzahimiya General Hospital	0	1	2	5	6	13	23	0
18	Artawiya General Hospital	0	0	2	4	7	15	20	0
19	Rumah General Hospital	0	0	1	4	7	6	18	0
20	Sajir General Hospital	0	0	1	3	15	12	17	0
21	Al Sulayel General Hospital	0	0	1	4	14	13	16	0
22	Al Ghat General Hosptal (PNSSH)	0	0	1	3	16	16	15	0
23	Huraimala General Hospital	0	1	1	4	6	12	15	0
24	Ruwaidah Hospital	0	1	2	5	9	9	15	0
25	Prince Salman Bn Mohd Hospital, Delim	0	0	2	1	12	13	12	0
26	Thadiq General Hospital	0	0	1	3	12	12	12	0
27	King Fahad Medical City Childrens Hospital, Riyadh	4	8	0	28	6	9	11	0
28	Durmah General Hospital	0	1	1	5	11	11	10	0
29	King Saud Medical City, Riyadh (Pediatric)	7	1	0	14	9	12	9	0
30	Tumair General Hospital	0	0	1	6	8	6	9	0
	TOTAL	**36**	**53**	**68**	**475**	**507**	**749**	**1424**	**277**

Table 3.1.6.1 Hemodialysis Patients in Saudi Arabia – MOH Sector Riyadh Region

No	Dialysis Center Name	Non-Saudi Pts	New Pts.	HCV+ve pts.	HCV PCR +ve Pts.	HBsAg+ve Pts	HIV+ve Pts.	Pts < 15 Yrs	Pts > 75 yrs	Diabetic Pts (DM)	Hypertensiv Pts (HTN)	Both DM & HTN	HD Pts. Died
1	King Salman Center for Kidney Disease Riyadh	0	43	42	13	21	0	0	44	20	111	103	21
2	King Saud Medical City, Riyadh	20	68	4	8	6	1	0	9	54	126	78	37
3	King Khalid Hospital, Al Kharj	26	12	11	6	1	0	0	9	27	15	16	14
4	Dawadmi General Hospital	0	16	3	0	0	0	0	0	25	16	8	0
5	King Fahad Medical City, Riyadh	0	0	6	0	0	0	0	5	5	13	34	4
6	Al Aflaj General Hospital	2	9	8	2	0	0	0	9	1	29	23	9
7	King Khalid Hospital, Majma'ah	1	0	5	0	2	0	0	0	0	20	29	6
8	Wadi Dawasir General Hospital	3	0	1	0	2	0	1	5	10	19	17	4
9	Afif General Hospital	1	15	2	0	2	0	0	8	0	30	11	5
10	Al Qawaeyah General Hospital	2	3	0	0	0	0	1	2	5	10	28	4
11	Shagra General Hospital	1	6	1	0	0	0	1	6	2	13	19	4
12	Al Iman General Hospital	20	12	0	0	0	0	0	0	4	10	21	6
13	Al Zulfi General Hospital	1	0	4	1	1	0	0	2	2	19	12	0
14	Hotat Bani Tamim General Hospital	0	7	1	1	0	0	0	5	22	5	3	9
15	King Salman Hospital Riyadh	1	22	3	0	2	0	0	2	9	6	9	4
16	Hotat Sudair General Hospital	1	8	1	0	0	0	0	2	0	7	14	4
17	Al Muzahimiya General Hospital	1	7	1	0	0	0	0	4	1	8	10	4
18	Artawiya General Hospital	1	2	1	0	0	0	0	0	7	4	9	1
19	Rumah General Hospital	0	3	0	0	0	0	0	5	0	8	10	0
20	Sajir General Hospital	2	6	1	1	2	0	0	3	1	7	9	0
21	Al Sulayel General Hospital	1	5	0	0	1	0	0	2	1	7	8	1
22	Al Ghat General Hosptal (PNSSH)	5	5	2	0	0	0	0	1	2	6	6	1
23	Huraimala General Hospital	1	4	2	1	0	0	0	3	0	7	6	1
24	Ruwaidah Hospital	0	2	0	0	0	0	0	7	0	6	6	2
25	Prince Salman Bn Mohd Hospital, Delim	1	1	3	3	0	0	0	0	3	3	4	2
26	Thadiq General Hospital	0	2	0	0	0	0	0	0	0	2	10	0
27	King Fahad Medical City Childrens Hospital, Riyadh	0	1	0	0	0	0	11	0	0	4	0	0
28	Durmah General Hospital	0	2	0	0	1	0	0	0	2	3	5	0
29	King Saud Medical City, Riyadh (Pediatric)	3	1	0	0	0	0	7	0	0	2	0	0
30	Tumair General Hospital	0	2	0	0	0	0	0	1	0	3	4	1
	TOTAL	**94**	**264**	**102**	**36**	**41**	**1**	**21**	**134**	**203**	**519**	**512**	**144**

Table 3.1.6.1 Hemodialysis Patient's Characteristics in Saudi Arabia – MOH Sector Riyadh Region

		Pts.	Blood Group				Sex		Vascular Access				
No	Dialysis Center Name	Total HD Pts.	A	B	AB	O	Male	Female	AVF	Vascular graft	Permanent jugular cath.	Permanent Femoral Cath.	Temporary Access
1	King Salman Center for Kidney Disease Riyadh	291	66	58	8	159	174	117	170	23	95	3	0
2	King Saud Medical City, Riyadh	276	75	53	10	138	146	130	131	15	124	6	0
3	King Khalid Hospital, Al Kharj	75	20	14	4	37	40	35	40	3	27	2	3
4	Dawadmi General Hospital	65	25	25	0	15	35	30	29	1	35	0	0
5	King Fahad Medical City, Riyadh	56	18	6	4	28	25	31	15	1	36	4	0
6	Al Aflaj General Hospital	54	16	4	3	31	27	27	33	5	15	1	0
7	King Khalid Hospital, Majma'ah	52	15	11	1	25	27	25	19	3	27	3	0
8	Wadi Dawasir General Hospital	49	20	9	1	19	27	22	17	2	29	1	0
9	Afif General Hospital	48	15	8	1	24	27	21	9	0	38	1	0
10	Al Qawaeyah General Hospital	43	10	5	0	28	23	20	20	2	21	0	0
11	Shagra General Hospital	42	8	7	1	26	19	23	13	2	23	4	0
12	Al Iman General Hospital	40	7	10	1	22	25	15	22	1	15	1	1
13	Al Zulfi General Hospital	38	6	10	1	21	24	14	17	0	20	1	0
14	Hotat Bani Tamim General Hospital	38	4	7	4	23	19	19	17	1	20	0	0
15	King Salman Hospital Riyadh	30	6	7	1	16	21	9	19	2	8	1	0
16	Hotat Sudair General Hospital	25	3	8	1	13	19	6	11	0	13	0	1
17	Al Muzahimiya General Hospital	23	4	4	1	14	13	10	7	0	16	0	0
18	Artawiya General Hospital	20	6	2	3	9	13	7	4	0	16	0	0
19	Rumah General Hospital	18	4	5	0	9	11	7	5	0	13	0	0
20	Sajir General Hospital	17	5	3	1	8	8	9	10	1	5	1	0
21	Al Sulayel General Hospital	16	4	4	0	8	8	8	8	0	8	0	0
22	Al Ghat General Hosptal (PNSSH)	15	5	2	1	7	9	6	6	1	7	1	0
23	Huraimala General Hospital	15	4	2	0	9	7	8	5	2	7	1	0
24	Ruwaidah Hospital	15	6	2	1	6	8	7	8	0	7	0	0
25	Prince Salman Bn Mohd Hospital, Delim	12	2	1	3	6	7	5	12	0	0	0	0
26	Thadiq General Hospital	12	4	3	0	5	7	5	3	1	8	0	0
27	King Fahad Medical City Childrens Hospital, Riyadh	11	3	4	0	4	9	2	0	0	11	0	0
28	Durmah General Hospital	10	6	0	0	4	6	4	5	0	5	0	0
29	King Saud Medical City, Riyadh (Pediatric)	9	3	0	0	6	7	2	0	0	8	1	0
30	Tumair General Hospital	9	2	1	0	6	5	4	2	0	7	0	0
	TOTAL	**1424**	**372**	**275**	**51**	**726**	**796**	**628**	**657**	**66**	**664**	**32**	**5**

Table 3.1.6.2 Hemodialysis Centers in Saudi Arabia – MOH Sector Makkah / Jeddah /Taif Region

No.	Dialysis Center Name	Consultant Nephrologists	Nephrology Specialists	Resident Doctor	Nurses	No. of Outlet Connections	Total No. of HD Machines	Total HD Pts.	No. of Follow up Tx. Pts
1	Al Noor Specialist Hospital	6	7	10	100	1	118	350	50
2	King Faisal Hospital Makkah	2	6	3	37	28	50	127	0
3	King Fahad Hospital Jeddah	5	3	6	0	42	42	40	0
4	Al Khurma Hospital	0	0	1	4	18	26	38	0
5	Rabiq General Hospital	0	1	0	10	11	20	34	0
6	Turabah General Hospital	0	0	3	5	18	23	34	0
7	Al Laith General Hospital	0	0	2	6	14	16	30	0
8	Raniah General Hospital	0	0	1	4	18	17	26	0
9	Adhum General Hospital	0	1	1	4	10	9	14	0
10	Messan General Hospital	0	0	1	4	0	10	6	0
	Total	**13**	**18**	**28**	**174**	**160**	**331**	**699**	**50**

Table 3.1.6.2 Hemodialysis Patients in Saudi Arabia – MOH Sector Makkah / Jeddah /Taif Region

No	Dialysis Center Name	Non-Saudi Pts	New Pts.	HCV+ve pts.	HCV PCR +ve Pts.	HBsAg+ve Pts	HIV+ve Pts.	Pts < 15 Yrs	Pts > 75 yrs	Diabetic Pts (DM)	Hypertensiv Pts (HTN)	Both DM & HTN	HD Pts. Died
1	Al Noor Specialist Hospital	6	60	75	10	20	0	0	21	20	30	289	13
2	King Faisal Hospital Makkah	3	70	1	0	4	0	0	10	24	71	20	0
3	King Fahad Hospital Jeddah	0	4	0	0	1	0	0	0	24	4	12	0
4	Al Khurma Hospital	1	7	2	2	1	0	0	1	5	30	3	4
5	Rabiq General Hospital	2	2	3	0	1	0	0	5	0	20	9	4
6	Turabah General Hospital	4	6	1	5	1	0	0	4	4	9	13	1
7	Al Laith General Hospital	1	12	4	0	4	0	0	0	5	15	5	4
8	Raniah General Hospital	0	9	0	1	1	0	0	9	1	10	14	9
9	Adhum General Hospital	1	1	1	1	1	0	0	2	0	11	3	0
10	Messan General Hospital	0	1	0	0	0	0	0	2	0	3	1	1
	Total	**18**	**172**	**87**	**19**	**34**	**0**	**0**	**54**	**83**	**203**	**369**	**36**

Table 3.1.6.2 Hemodialysis Patient's Characteristics in Saudi Arabia – MOH Sector Makkah / Jeddah /Taif Region

		Pts.	Blood Group				Sex		Vascular Access				
No	Dialysis Center Name	Total HD Pts.	A	B	AB	O	Male	Female	AVF	Vascular graft	Permanent jugular cath.	Permanent Femoral Cath.	Temporary Access
1	Al Noor Specialist Hospital	350	128	172	24	26	140	210	210	10	126	4	0
2	King Faisal Hospital Makkah	127	22	28	14	63	61	66	76	3	46	2	0
3	King Fahad Hospital Jeddah	40	6	10	2	22	25	15	19	0	21	0	0
4	Al Khurma Hospital	38	7	4	2	25	22	16	22	1	15	0	0
5	Rabiq General Hospital	34	10	5	0	19	20	14	17	0	17	0	0
6	Turabah General Hospital	34	8	8	0	18	19	15	17	0	16	0	1
7	Al Laith General Hospital	30	10	10	0	10	19	11	19	0	11	0	0
8	Raniah General Hospital	26	1	12	2	11	17	9	13	0	12	0	1
9	Adhum General Hospital	14	1	1	0	12	7	7	6	1	0	0	7
10	Messan General Hospital	6	2	3	0	1	5	1	2	0	4	0	0
	Total	**699**	**195**	**253**	**44**	**207**	**335**	**364**	**401**	**15**	**268**	**6**	**9**

Table 3.1.6.3 Hemodialysis Centers in Saudi Arabia – MOH Sector Madinah Region

No.	Dialysis Center Name	Consultant Nephrologists	Nephrology Specialists	Resident Doctor	Nurses	No. of Outlet Connections	Total No. of HD Machines	Total HD Pts.	No. of Follow up Tx. Pts
1	King Fahad Hospital, Madinah	5	8	7	74	150	150	280	0
2	Prince Abdul Mohsin Hospital. Al Ulla	1	0	0	7	32	36	46	0
3	Badr General Hospital	0	2	0	7	21	22	42	0
4	Khaiber General Hospital	0	1	0	9	30	3	29	0
5	Al Hanakiya General Hospital	0	1	1	8	17	29	28	0
6	Al Eass General Hospital	0	1	0	5	18	23	23	0
7	Al Mhad General Hospital	0	1	0	5	20	19	22	0
8	Yanbu General Hospital	0	0	1	10	28	17	18	0
9	Maternity and Children Hospital, Madina	4	0	1	4	2	2	0	0
	Total	**10**	**14**	**10**	**129**	**318**	**301**	**488**	**0**

Table 3.1.6.3 Hemodialysis Patients in Saudi Arabia – MOH Sector Madinah Region

No	Dialysis Center Name	Non-Saudi Pts	New Pts.	HCV+ve pts.	HCV PCR +ve Pts.	HBsAg+ve Pts	HIV+ve Pts.	Pts < 15 Yrs	Pts > 75 yrs	Diabetic Pts (DM)	Hypertensiv Pts (HTN)	Both DM & HTN	HD Pts. Died
1	King Fahad Hospital, Madinah	22	110	14	7	18	1	9	27	10	68	126	47
2	Prince Abdul Mohsin Hospital. Al Ulla	45	10	4	0	2	0	0	4	5	5	15	10
3	Badr General Hospital	0	5	4	0	2	0	0	4	1	17	11	3
4	Khaiber General Hospital	0	3	0	0	1	0	0	5	4	15	10	5
5	Al Hanakiya General Hospital	1	7	0	0	3	0	0	4	0	12	13	1
6	Al Eass General Hospital	0	2	0	0	0	0	0	4	8	5	10	3
7	Al Mhad General Hospital	0	2	1	0	1	0	0	2	5	10	5	2
8	Yanbu General Hospital	6	0	0	0	0	0	0	0	1	5	10	0
9	Maternity and Children Hospital, Madina	0	0	0	0	0	0	0	0	0	0	0	0
	Total	**74**	**139**	**23**	**7**	**27**	**1**	**9**	**50**	**34**	**137**	**200**	**71**

Table 3.1.6.3 Hemodialysis Patient's Characteristics in Saudi Arabia in Saudi Arabia – MOH Sector Madinah Region

		Pts.	Blood Group				Sex		Vascular Access				
No	Dialysis Center Name	Total HD Pts.	A	B	AB	O	Male	Female	AVF	Vascular graft	Permanent jugular cath.	Permanent Femoral Cath.	Temporary Access
1	King Fahad Hospital, Madinah	280	71	44	8	157	137	143	150	5	123	2	0
2	Prince Abdul Mohsin Hospital. Al Ulla	46	8	6	2	30	20	26	32	1	12	0	1
3	Badr General Hospital	42	6	3	0	33	33	9	38	0	3	0	1
4	Khaiber General Hospital	29	6	4	2	17	16	13	10	18	1	0	0
5	Al Hanakiya General Hospital	28	9	4	1	14	18	10	14	1	13	0	0
6	Al Eass General Hospital	23	4	4	2	13	16	7	17	0	0	6	0
7	Al Mhad General Hospital	22	6	4	1	11	10	12	20	0	1	1	0
8	Yanbu General Hospital	18	5	1	0	12	11	7	13	0	5	0	0
9	Maternity and Children Hospital, Madina	0	0	0	0	0	0	0	0	0	0	0	0
	Total	**488**	**115**	**70**	**16**	**287**	**261**	**227**	**294**	**25**	**158**	**9**	**2**

Table 3.1.6.4 Hemodialysis Centers in Saudi Arabia – MOH Sector Tabuk Region

No.	Dialysis Center Name	Consultant Nephrologists	Nephrology Specialists	Resident Doctor	Nurses	No. of Outlet Connections	Total No. of HD Machines	Total HD Pts.	No. of Follow up Tx. Pts
1	King Khalid Hospital, Tabuk	1	3	0	4	36	36	65	58
2	Al Hawraa Hospital Amloj	0	1	0	10	30	37	54	0
3	Dhuba General Hospital	0	1	2	8	29	30	30	5
4	Tayma General Hospital	0	1	1	9	24	33	30	2
5	Al Wajeh General Hospital	0	1	1	12	15	15	20	0
6	Al Bada General Hospital	0	1	0	7	13	9	17	0
7	Haql General Hospital	0	1	1	6	16	16	14	2
	Total	**1**	**9**	**5**	**56**	**163**	**176**	**230**	**67**

Table 3.1.6.4. Hemodialysis Patients in Saudi Arabia – MOH Sector Tabuk Region

No	Dialysis Center Name	Non-Saudi Pts	New Pts.	HCV+ve pts.	HCV PCR +ve Pts.	HBsAg+ve Pts	HIV+ve Pts.	Pts < 15 Yrs	Pts > 75 yrs	Diabetic Pts (DM)	Hypertensiv Pts (HTN)	Both DM & HTN	HD Pts. Died 2019
1	King Khalid Hospital, Tabuk	19	0	1	4	3	1	0	0	27	18	10	11
2	Al Hawraa Hospital Amloj	0	8	2	1	1	0	0	6	2	24	19	4
3	Dhuba General Hospital	1	8	1	0	1	0	0	3	0	17	6	6
4	Tayma General Hospital	1	3	1	1	1	0	0	0	0	7	17	2
5	Al Wajeh General Hospital	1	2	0	0	0	0	0	1	1	12	3	5
6	Al Bada General Hospital	0	4	0	0	0	0	0	0	1	7	1	0
7	Haql General Hospital	0	3	1	0	0	0	0	0	2	5	2	2
	Total	**22**	**28**	**6**	**6**	**6**	**1**	**0**	**10**	**33**	**90**	**58**	**30**

Table 3.1.6.4 Hemodialysis Patient's Characteristics in Saudi Arabia – MOH Sector Tabuk Region

		Pts.	Blood Group				Sex		Vascular Access				
No	Dialysis Center Name	Total HD Pts.	A	B	AB	O	Male	Female	AVF	Vascular graft	Permanent jugular cath.	Permanent Femoral Cath.	Temporary Access
1	King Khalid Hospital, Tabuk	65	12	18	7	28	39	26	28	0	27	10	0
2	Al Hawraa Hospital Amloj	54	16	7	3	28	31	23	24	7	21	0	2
3	Dhuba General Hospital	30	10	6	1	13	19	11	21	0	8	1	0
4	Tayma General Hospital	30	5	5	2	18	14	16	24	0	6	0	0
5	Al Wajeh General Hospital	20	1	5	0	14	11	9	8	1	9	1	1
6	Al Bada General Hospital	17	4	3	1	9	9	8	11	1	5	0	0
7	Haql General Hospital	14	6	6	0	2	5	9	10	0	3	1	0
	Total	**230**	**54**	**50**	**14**	**112**	**128**	**102**	**126**	**9**	**79**	**13**	**3**

Table 3.1.6.5 Hemodialysis Centers in Saudi Arabia – MOH Sector Eastern Region Al Hasa / Hafar Al Batin Region

No.	Dialysis Center Name	Consultant Nephrologists	Nephrology Specialists	Resident Doctor	Nurses	No. of Outlet Connections	Total No. of HD Machines	Total HD Pts.	No. of Follow up Tx. Pts
1	King Fahad Hospital, Hofuf	2	3	9	93	60	81	262	130
2	Dammam Medical Complex	3	3	4	93	30	55	191	65
3	King Khalid General Hospital, Hafar al Baten	2	2	5	41	50	46	127	66
4	Al Jubail General Hospital	2	3	3	20	36	30	48	17
5	King Fahad Specialist Hospital, Dammam	9	5	0	22	14	28	43	1275
6	Al Nairiyiah General Hospital	0	1	2	10	25	21	35	0
7	Al Khafji General Hospital	0	1	1	8	18	14	32	0
8	Abgaig General Hospital	0	0	1	10	10	15	19	0
9	Rastanoura General Hospital	0	1	1	11	10	13	16	0
10	Al Gaissoma General Hospital	1	1	0	0	11	11	8	0
11	Qariya Oliya General Hospital	0	0	1	1	7	6	8	0
	Total	**19**	**20**	**27**	**309**	**271**	**320**	**789**	**1553**

Table 3.1.6.5. Hemodialysis Patients in Saudi Arabia – MOH Sector Eastern Region Al Hasa / Hafar Al Batin Region

No	Dialysis Center Name	Non-Saudi Pts	New Pts.	HCV+ve pts.	HCV PCR +ve Pts.	HBsAg+ve Pts	HIV+ve Pts.	Pts < 15 Yrs	Pts > 75 yrs	Diabetic Pts (DM)	Hypertensiv Pts (HTN)	Both DM & HTN	HD Pts. Died
1	King Fahad Hospital, Hofuf	9	147	19	3	5	2	0	16	15	95	135	36
2	Dammam Medical Complex	92	72	11	3	6	1	0	2	29	61	30	8
3	King Khalid General Hospital, Hafar al Baten	5	50	7	2	4	0	0	2	63	39	19	20
4	Al Jubail General Hospital	9	11	3	0	2	0	0	5	4	35	8	2
5	King Fahad Specialist Hospital, Dammam	1	10	1	0	3	0	10	0	6	14	10	3
6	Al Nairiyiah General Hospital	2	8	3	0	0	0	0	2	5	11	14	9
7	Al Khafji General Hospital	3	5	3	2	0	0	0	3	10	5	12	4
8	Abgaig General Hospital	7	8	0	0	0	0	0	3	0	5	14	3
9	Rastanoura General Hospital	2	2	1	1	1	0	0	0	3	6	3	2
10	Al Gaissoma General Hospital	1	5	0	0	0	0	0	0	1	3	3	5
11	Qariya Oliya General Hospital	1	1	100	1	0	0	0	2	1	1	5	1
	Total	**132**	**319**	**148**	**12**	**21**	**3**	**10**	**35**	**137**	**275**	**253**	**93**

Table 3.1.6.5 Hemodialysis Patient's Characteristics in Saudi Arabia – MOH Sector Eastern Region Al Hasa / Hafar Al Batin Region

		Pts.	Blood Group				Sex		Vascular Access				
No	Dialysis Center Name	Total HD Pts.	A	B	AB	O	Male	Female	AVF	Vascular graft	Permanent jugular cath.	Permanent Femoral Cath.	Temporary Access
1	King Fahad Hospital, Hofuf	262	64	54	10	134	158	104	233	6	20	3	0
2	Dammam Medical Complex	191	25	24	2	140	117	74	61	14	110	6	0
3	King Khalid General Hospital, Hafar al Baten	127	50	35	15	27	74	53	65	2	50	9	1
4	Al Jubail General Hospital	48	7	13	10	18	37	11	16	2	29	1	0
5	King Fahad Specialist Hospital, Dammam	43	10	8	1	24	21	22	4	0	39	0	0
6	Al Nairiyiah General Hospital	35	9	11	3	12	19	16	9	1	25	0	0
7	Al Khafji General Hospital	32	8	7	7	10	19	13	9	1	21	1	0
8	Abgaig General Hospital	19	7	1	1	10	13	6	10	1	7	1	0
9	Rastanoura General Hospital	16	4	1	0	11	9	7	8	1	5	2	0
10	Al Gaissoma General Hospital	8	1	1	0	6	4	4	5	0	2	1	0
11	Qariya Oliya General Hospital	8	3	1	1	3	3	5	4	0	3	0	1
	Total	**789**	**188**	**156**	**50**	**395**	**474**	**315**	**424**	**28**	**311**	**24**	**2**

Table 3.1.6.6 Hemodialysis Centers in Saudi Arabia – MOH Sector Qassim Region

No.	Dialysis Center Name	Consultant Nephrologists	Nephrology Specialists	Resident Doctor	Nurses	No. of Outlet Connections	Total No. of HD Machines	Total HD Pts.	No. of Follow up Tx. Pts
1	Buraida Central Hospital, Qassim	1	1	2	15	8	22	84	6
2	Al Bukariya General Hospital	0	1	3	12	11	23	47	0
3	Al Midnab General Hospital	0	1	1	10	12	21	41	0
4	Al Asyah General Hospital	0	0	2	4	9	14	28	0
5	Riyadh Al Khabra General Hospital	0	0	1	7	9	19	28	0
6	Al Badaya General Hospital	0	0	2	9	18	18	27	0
7	Ayun Al Juwah General Hospital	0	0	2	7	15	13	24	0
8	Dhariyah General Hospital	0	0	1	4	12	13	22	0
9	King Fahd Specialist Hospital, Buraida	6	4	2	11	19	32	18	0
10	Oklat Al-Sugour General Hospital	0	0	0	4	5	4	12	0
11	Qiba General Hospital	0	0	1	4	10	7	11	0
12	Qusaibah General Hospital	0	0	1	3	4	5	10	0
	Total	**7**	**7**	**18**	**90**	**132**	**191**	**352**	**6**

Table 3.1.6.6 Hemodialysis Patients in Saudi Arabia – MOH Sector Qassim Region

No	Dialysis Center Name	Non-Saudi Pts	New Pts.	HCV+ve pts.	HCV PCR +ve Pts.	HBsAg+ve Pts	HIV+ve Pts.	Pts < 15 Yrs	Pts > 75 yrs	Diabetic Pts (DM)	Hypertensiv Pts (HTN)	Both DM & HTN	HD Pts. Died
1	Buraida Central Hospital, Qassim	14	64	0	0	0	0	0	5	40	29	7	10
2	Al Bukariya General Hospital	0	10	5	1	0	0	0	2	0	20	21	4
3	Al Midnab General Hospital	5	6	4	0	1	0	0	3	6	11	23	4
4	Al Asyah General Hospital	6	2	3	2	0	0	0	2	11	12	5	2
5	Riyadh Al Khabra General Hospital	2	9	0	0	2	0	0	3	0	12	12	2
6	Al Badaya General Hospital	3	1	0	0	4	0	0	2	1	18	8	1
7	Ayun Al Juwah General Hospital	10	9	2	2	0	0	1	2	0	8	15	3
8	Dhariyah General Hospital	0	1	1	0	1	0	0	4	0	11	8	2
9	King Fahd Specialist Hospital, Buraida	1	9	0	0	0	0	0	7	0	4	10	0
10	Oklat Al-Sugour General Hospital	0	5	0	0	0	0	0	1	4	7	0	4
11	Qiba General Hospital	1	0	2	0	1	0	0	0	0	5	4	0
12	Qusaibah General Hospital	2	5	0	0	0	0	0	3	1	7	1	0
	Total	**44**	**121**	**17**	**5**	**9**	**0**	**1**	**34**	**63**	**144**	**114**	**32**

Table 3.1.6.6 Hemodialysis Patient's Characteristics in Saudi Arabia – MOH Sector Qassim Region

		Pts.	Blood Group				Sex		Vascular Access				
No	Dialysis Center Name	Total HD Pts.	A	B	AB	O	Male	Female	AVF	Vascular graft	Permanent jugular cath.	Permanent Femoral Cath.	Temporary Access
1	Buraida Central Hospital, Qassim	84	12	16	6	50	40	44	15	0	50	10	9
2	Al Bukariya General Hospital	47	15	7	2	23	25	22	17	1	26	3	0
3	Al Midnab General Hospital	41	11	10	1	19	23	18	15	1	0	25	0
4	Al Asyah General Hospital	28	14	7	5	2	14	14	7	0	20	1	0
5	Riyadh Al Khabra General Hospital	28	9	7	2	10	20	8	15	3	6	0	4
6	Al Badaya General Hospital	27	7	5	1	14	10	17	25	0	1	1	0
7	Ayun Al Juwah General Hospital	24	3	5	1	15	18	6	5	1	18	0	0
8	Dhariyah General Hospital	22	5	3	2	12	22	0	8	1	12	0	1
9	King Fahd Specialist Hospital, Buraida	18	5	4	1	8	11	7	3	0	13	2	0
10	Oklat Al-Sugour General Hospital	12	6	0	1	5	5	7	4	0	7	1	0
11	Qiba General Hospital	11	1	4	0	6	7	4	3	2	6	0	0
12	Qusaibah General Hospital	10	1	1	1	7	5	5	2	0	8	0	0
	Total	**352**	**89**	**69**	**23**	**171**	**200**	**152**	**119**	**9**	**167**	**43**	**14**

Table 3.1.6.7 Hemodialysis Centers in Saudi Arabia – MOH Sector Al Baha Region

No.	Dialysis Center Name	Consultant Nephrologists	Nephrology Specialists	Resident Doctor	Nurses	No. of Outlet Connections	Total No. of HD Machines	Total HD Pts.	No. of Follow up Tx. Pts
1	King Fahad Hospital, Al Baha	0	2	3	2	19	32	53	0
2	Al Mikhwah General Hospital	0	1	1	0	16	18	39	0
3	Gilwah General Hospital	0	1	1	8	22	11	25	0
4	Al Mandag General Hospital	0	0	1	5	21	0	15	0
5	Aqiq General Hospital	0	0	2	4	7	6	13	0
6	Al Qaraah Hospital, Al Baha	0	0	2	5	10	9	7	0
	Total	**0**	**4**	**10**	**24**	**95**	**76**	**152**	**0**

Table 3.1.6.7 Hemodialysis Patients in Saudi Arabia – MOH Sector Al Baha Region

No	Dialysis Center Name	Non-Saudi Pts	New Pts.	HCV+ve pts.	HCV PCR +ve Pts.	HBsAg+ve Pts	HIV+ve Pts.	Pts < 15 Yrs	Pts > 75 yrs	Diabetic Pts (DM)	Hypertensiv Pts (HTN)	Both DM & HTN	HD Pts. Died
1	King Fahad Hospital, Al Baha	3	10	1	0	0	0	0	0	16	16	16	8
2	Al Mikhwah General Hospital	0	0	4	2	0	0	0	4	7	13	9	4
3	Gilwah General Hospital	0	8	3	1	0	0	0	2	0	10	13	6
4	Al Mandag General Hospital	0	3	0	0	0	0	0	2	2	3	6	2
5	Aqiq General Hospital	1	3	1	0	0	0	0	2	0	5	8	9
6	Al Qaraah Hospital, Al Baha	1	3	2	0	0	0	0	1	1	2	3	0
	Total	**5**	**27**	**11**	**3**	**0**	**0**	**0**	**11**	**26**	**49**	**55**	**29**

Table 3.1.6.7 Hemodialysis Patient's Characteristics in Saudi Arabia – MOH Sector Al Baha Region

		Pts.	Blood Group				Sex		Vascular Access				
No	Dialysis Center Name	Total HD Pts.	A	B	AB	O	Male	Female	AVF	Vascular graft	Permanent jugular cath.	Permanent Femoral Cath.	Temporary Access
1	King Fahad Hospital, Al Baha	53	14	10	2	27	22	31	25	1	23	2	2
2	Al Mikhwah General Hospital	39	10	2	0	27	20	19	25	0	14	0	0
3	Gilwah General Hospital	25	6	3	1	15	12	13	14	0	11	0	0
4	Al Mandag General Hospital	15	3	2	1	9	8	7	7	2	6	0	0
5	Aqiq General Hospital	13	3	2	0	8	9	4	11	0	2	0	0
6	Al Qaraah Hospital, Al Baha	7	2	1	1	3	5	2	4	1	2	0	0
	Total	**152**	**38**	**20**	**5**	**89**	**76**	**76**	**86**	**4**	**58**	**2**	**2**

Table 3.1.6.8 Hemodialysis Centers in Saudi Arabia – MOH Sector Al-Jouf Region

No.	Dialysis Center Name	Consultant Nephrologists	Nephrology Specialists	GP's	Nurses	No. of Outlet Connections	Total No. of HD Machines	Total HD Pts.	No. of Follow up Tx. Pts
1	Tabarjal General Hospital	1	0	2	16	16	18	48	0
2	Domat Al Jundal General Hospital	0	1	2	14	15	27	46	0
	Total	**1**	**1**	**4**	**30**	**31**	**45**	**94**	**0**

Table 3.1.6.8 Hemodialysis Patients in Saudi Arabia – MOH Sector Al-Jouf Region

No	Dialysis Center Name	Non-Saudi Pts	New Pts.	HCV+ve pts.	HCV PCR +ve Pts.	HBsAg+ve Pts	HIV+ve Pts.	Pts < 15 Yrs	Pts > 75 yrs	Diabetic Pts (DM)	Hypertensiv Pts (HTN)	Both DM & HTN	HD Pts. Died
1	Tabarjal General Hospital	2	36	4	1	0	0	0	2	4	26	14	12
2	Domat Al Jundal General Hospital	2	5	2	0	0	0	0	5	2	11	24	5
	Total	**4**	**41**	**6**	**1**	**0**	**0**	**0**	**7**	**6**	**37**	**38**	**17**

Table 3.1.6.8 Hemodialysis Patient's Characteristics in Saudi Arabia – MOH Sector Al-Jouf Region

		Pts.	Blood Group				Sex		Vascular Access				
No	Dialysis Center Name	Total HD Pts.	A	B	AB	O	Male	Female	AVF	Vascular graft	Permanent jugular cath.	Permanent Femoral Cath.	Temporary Access
1	Tabarjal General Hospital	48	10	12	1	25	28	20	14	0	33	0	1
2	Domat Al Jundal General Hospital	46	11	17	1	17	25	21	30	4	11	1	0
	Total	**94**	**21**	**29**	**2**	**42**	**53**	**41**	**44**	**4**	**44**	**1**	**1**

Table 3.1.6.9 Hemodialysis Centers in Saudi Arabia – MOH Sector Northern Borders / Qurrayat Region

No.	Dialysis Center Name	Consultant Nephrologists	Nephrology Specialists	GP's	Nurses	No. of Outlet Connections	Total No. of HD Machines	Total HD Pts.	No. of Follow up Tx. Pts
1	Ar-ar Central Hospital	0	3	4	15	37	37	64	5
2	Rafah General Hospital	1	1	2	10	32	27	60	2
3	Turaif General Hospital	1	0	2	17	20	29	30	0
4	Al Qurrayat General Hospital	0	1	3	16	8	8	23	63
5	Al Owaigila General Hospital	0	0	0	3	10	8	8	0
6	Shobat Nissab General Hospital	0	0	1	1	4	4	3	0
	Total	**2**	**5**	**12**	**62**	**111**	**113**	**188**	**70**

Table 3.1.6.9 Hemodialysis Patients in Saudi Arabia – MOH Sector Northern Borders / Qurrayat Region

No	Dialysis Center Name	*Non-Saudi Pts*	*New Pts.*	*HCV+ve pts.*	HCV PCR +ve Pts.	*HBsAg+ve Pts*	*HIV+ve Pts.*	*Pts < 15 Yrs*	*Pts > 75 yrs*	*Diabetic Pts (DM)*	Hypertensiv Pts (HTN)	Both DM & HTN	HD Pts. Died
1	Ar-ar Central Hospital	8	15	4	0	3	0	1	17	27	21	14	4
2	Rafah General Hospital	4	6	0	0	1	0	0	4	10	18	24	5
3	Turaif General Hospital	0	3	3	0	2	0	0	0	3	9	9	4
4	Al Qurrayat General Hospital	4	3	4	0	1	0	0	3	0	6	14	5
5	Al Owaigila General Hospital	0	3	0	0	0	0	0	3	0	3	2	1
6	Shobat Nissab General Hospital	0	0	0	0	0	0	0	0	0	2	1	1
	Total	**16**	**30**	**11**	**0**	**7**	**0**	**1**	**27**	**40**	**59**	**64**	**20**

Table 3.1.6.9 Hemodialysis Patients Characteristics in Saudi Arabia – MOH Sector Northern Borders / Qurrayat Region

		Pts.	Blood Group				Sex		Vascular Access				
No	Dialysis Center Name	Total HD Pts.	A	B	AB	O	Male	Female	AVF	Vascular graft	Permanent jugular cath.	Permanent Femoral Cath.	Temporary Access
1	Ar-ar Central Hospital	64	12	15	6	31	35	29	35	1	28	0	0
2	Rafah General Hospital	60	16	19	0	25	34	26	37	0	17	6	0
3	Turaif General Hospital	30	6	7	1	16	18	12	13	0	17	0	0
4	Al Qurrayat General Hospital	23	7	7	0	9	14	9	20	0	3	0	0
5	Al Owaigila General Hospital	8	0	4	0	4	4	4	4	0	4	0	0
6	Shobat Nissab General Hospital	3	1	1	0	1	1	2	1	0	2	0	0
	Total	**188**	**42**	**53**	**7**	**86**	**106**	**82**	**110**	**1**	**71**	**6**	**0**

Table 3.1.6.10 Hemodialysis Centers in Saudi Arabia – MOH Sector Hail Region

No.	Dialysis Center Name	Consultant Nephrologists	Nephrology Specialists	Resident Doctor	Nurses	No. of Outlet Connections	Total No. of HD Machines	Total HD Pts.	No. of Follow up Tx. Pts
1	King Khalid Hospital, Hail	1	5	6	26	52	87	193	0
2	Baqaa General Hospital	0	0	2	10	21	36	43	2
3	Mawqaq General Hospital	0	0	2	7	12	15	15	0
4	Shenan General Hospital	0	0	1	4	6	11	10	0
5	Al Sulaymi General Hospital	0	0	1	2	8	11	8	0
6	Samira General Hospital	0	0	1	2	9	11	8	0
7	Al Shammali General Hospital	0	0	1	4	12	12	6	0
8	Ghazallah General Hospital	0	0	2	2	5	5	6	0
	Total	**1**	**5**	**16**	**57**	**125**	**188**	**289**	**2**

Table 3.1.6.10 Hemodialysis Patients in Saudi Arabia – MOH Sector Hail Region

No	Dialysis Center Name	Non-Saudi Pts	New Pts.	HCV+ve pts.	HCV PCR +ve Pts.	HBsAg+ve Pts	HIV+ve Pts.	Pts < 15 Yrs	Pts > 75 yrs	Diabetic Pts (DM)	Hypertensiv Pts (HTN)	Both DM & HTN	HD Pts. Died 2019
1	King Khalid Hospital, Hail	6	84	9	2	4	0	0	16	51	81	41	16
2	Baqaa General Hospital	2	9	4	2	1	0	0	6	0	10	31	3
3	Mawqaq General Hospital	0	4	1	0	0	0	0	5	1	5	9	3
4	Shenan General Hospital	0	8	0	0	0	0	0	3	0	2	8	4
5	Al Sulaymi General Hospital	0	1	0	0	0	0	0	3	1	3	3	0
6	Samira General Hospital	4	0	2	0	0	0	0	1	0	2	6	3
7	Al Shammali General Hospital	0	0	0	0	0	0	0	5	0	0	6	1
8	Ghazallah General Hospital	0	2	0	0	0	0	0	2	0	1	5	0
	Total	**12**	**108**	**16**	**4**	**5**	**0**	**0**	**41**	**53**	**104**	**109**	**30**

Table 3.1.6.10 Hemodialysis Characteristics in Saudi Arabia – MOH Sector Hail Region

		Pts.	Blood Group				Sex		Vascular Access				
No	Dialysis Center Name	Total HD Pts.	A	B	AB	O	Male	Female	AVF	Vascular graft	Permanent jugular cath.	Permanent Femoral Cath.	Temporary Access
1	King Khalid Hospital, Hail	193	49	33	5	106	112	81	130	7	53	3	0
2	Baqaa General Hospital	43	6	13	0	24	25	18	26	0	17	0	0
3	Mawqaq General Hospital	15	4	2	3	6	6	9	9	0	6	0	0
4	Shenan General Hospital	10	2	3	0	5	7	3	7	0	3	0	0
5	Al Sulaymi General Hospital	8	2	2	0	4	3	5	5	0	3	0	0
6	Samira General Hospital	8	2	1	0	5	4	4	4	0	2	2	0
7	Al Shammali General Hospital	6	1	2	0	3	5	1	4	0	2	0	0
8	Ghazallah General Hospital	6	0	0	0	6	3	3	4	0	2	0	0
	Total	**289**	**66**	**56**	**8**	**159**	**165**	**124**	**189**	**7**	**88**	**5**	**0**

Table 3.1.6.11 Hemodialysis Centers in Saudi Arabia – MOH Sector Gizan Region

No.	Dialysis Center Name	Consultant Nephrologists	Nephrology Specialists	Resident Doctor	Nurses	No. of Outlet Connections	Total No. of HD Machines	Total HD Pts.	No. of Follow up Tx. Pts
1	King Fahad Central Hospital, Gizan	1	5	1	58	71	79	193	1
2	Sabia General Hospital	1	2	1	28	26	65	146	0
3	Samtha General Hospital	0	1	2	13	24	24	50	0
4	Al Arda General Hospital, Gizan	0	1	1	8	25	25	49	0
5	Gizan General Hospital	0	0	2	16	16	17	40	0
6	Faifa General hospital, Gizan	0	1	0	9	10	11	26	0
7	Aldarb General Hospital, Gizan	0	0	2	8	10	11	23	0
8	Fursan General Hospital	0	1	0	4	7	6	8	0
	Total	**2**	**11**	**9**	**144**	**189**	**238**	**535**	**1**

Table 3.1.6.11 Hemodialysis Patients in Saudi Arabia – MOH Sector Gizan Region

No	Dialysis Center Name	Non-Saudi Pts	New Pts.	HCV+ve pts.	HCV PCR +ve Pts.	HBsAg+ve Pts	HIV+ve Pts.	Pts < 15 Yrs	Pts > 75 yrs	Diabetic Pts (DM)	Hypertensiv Pts (HTN)	Both DM & HTN	HD Pts. Died
1	King Fahad Central Hospital, Gizan	68	50	20	6	16	0	7	5	30	70	65	4
2	Sabia General Hospital	57	0	12	7	5	0	0	9	46	67	15	4
3	Samtha General Hospital	44	2	18	8	10	0	0	4	8	20	2	4
4	Al Arda General Hospital, Gizan	17	1	0	0	0	0	0	4	3	20	2	3
5	Gizan General Hospital	18	1	0	0	0	0	0	2	6	25	6	4
6	Faifa General hospital, Gizan	3	1	0	0	0	0	0	1	6	10	10	1
7	Aldarb General Hospital, Gizan	5	5	0	0	0	0	0	3	5	11	1	5
8	Fursan General Hospital	0	2	0	0	0	0	0	1	0	6	2	2
	Total	**212**	**62**	**50**	**21**	**31**	**0**	**7**	**29**	**104**	**229**	**103**	**27**

Table 3.1.6.11 Hemodialysis Patients in Saudi Arabia – MOH Sector Gizan Region

		Pts.	Blood Group				Sex		Vascular Access				
No	Dialysis Center Name	Total HD Pts.	A	B	AB	O	Male	Female	AVF	Vascular graft	Permanent jugular cath.	Permanent Femoral Cath.	Temporary Access
1	King Fahad Central Hospital, Gizan	193	19	13	2	159	91	102	155	1	30	7	0
2	Sabia General Hospital	146	47	11	7	81	79	67	54	1	78	2	11
3	Samtha General Hospital	50	7	5	10	28	20	30	19	1	28	0	2
4	Al Arda General Hospital, Gizan	49	7	3	1	38	24	25	25	0	22	2	0
5	Gizan General Hospital	40	9	5	1	25	20	20	26	0	14	0	0
6	Faifa General hospital, Gizan	26	12	0	0	14	16	10	10	1	13	2	0
7	Aldarb General Hospital, Gizan	23	4	6	0	13	13	10	13	0	9	1	0
8	Fursan General Hospital	8	1	1	0	6	3	5	0	0	8	0	0
	Total	**535**	**106**	**44**	**21**	**364**	**266**	**269**	**302**	**4**	**202**	**14**	**13**

Table 3.1.6.12 Hemodialysis Centers in Saudi Arabia – MOH Sector Najran Region

No.	Dialysis Center Name	Consultant Nephrologists	Nephrology Specialists	Resident Doctor	Nurses	No. of Outlet Connections	Total No. of HD Machines	Total HD Pts.	No. of Follow up Tx. Pts
1	King Khalid Hospital, Najran	2	3	3	28	35	54	130	32
2	Sharurah General Hospital	0	2	0	7	25	31	52	32
3	Habona General Hospital	0	0	1	3	13	13	11	0
4	Yadama General Hospital, Najran	0	0	2	3	7	10	11	0
5	Thar Hospital, Najran	0	0	1	2	7	8	6	0
6	Bader Al Janob General Hospital	0	0	1	2	10	8	3	0
	Total	**2**	**5**	**8**	**45**	**97**	**124**	**213**	**64**

Table 3.1.6.12 Hemodialysis Patients in Saudi Arabia – MOH Sector Najran Region

No	Dialysis Center Name	Non-Saudi Pts	New Pts.	HCV+ve pts.	HCV PCR +ve Pts.	HBsAg+ve Pts	HIV+ve Pts.	Pts < 15 Yrs	Pts > 75 yrs	Diabetic Pts (DM)	Hypertensiv Pts (HTN)	Both DM & HTN	HD Pts. Died
1	King Khalid Hospital, Najran	52	36	9	0	10	0	0	19	34	14	54	10
2	Sharurah General Hospital	11	10	3	2	5	0	0	3	28	13	9	8
3	Habona General Hospital	0	3	0	0	0	0	0	3	2	4	3	2
4	Yadama General Hospital, Najran	0	2	0	0	1	0	0	1	0	2	8	3
5	Thar Hospital, Najran	0	1	0	0	0	0	0	3	0	1	5	0
6	Bader Al Janob General Hospital	0	0	0	0	0	0	0	1	1	1	1	0
	Total	**63**	**52**	**12**	**2**	**16**	**0**	**0**	**30**	**65**	**35**	**80**	**23**

Table 3.1.6.12 Hemodialysis Patients Characteristics in Saudi Arabia – MOH Sector Najran Region

		Pts.	Blood Group				Sex		Vascular Access				
No	Dialysis Center Name	Total HD Pts.	A	B	AB	O	Male	Female	AVF	Vascular graft	Permanent jugular cath.	Permanent Femoral Cath.	Temporary Access
1	King Khalid Hospital, Najran	130	34	25	6	65	83	47	56	0	70	4	0
2	Sharurah General Hospital	52	12	17	2	21	28	24	20	0	30	2	0
3	Habona General Hospital	11	2	4	0	5	6	5	6	1	4	0	0
4	Yadama General Hospital, Najran	11	4	0	1	6	5	6	4	0	7	0	0
5	Thar Hospital, Najran	6	1	1	0	4	3	3	2	4	0	0	0
6	Bader Al Janob General Hospital	3	1	0	0	2	2	1	0	0	3	0	0
	Total	**213**	**54**	**47**	**9**	**103**	**127**	**86**	**88**	**5**	**114**	**6**	**0**

Table 3.1.6.13 Hemodialysis Centers in Saudi Arabia – MOH Sector Assir / Bisha Region

No.	Dialysis Center Name	Consultant Nephrologists	Nephrology Specialists	Resident Doctor	Nurses	No. of Outlet Connections	Total No. of HD Machines	Total HD Pts.	No. of Follow up Tx. Pts
1	King Abdullah Hospital, Besha	0	1	3	18	38	41	51	0
2	Dharan Al Janoub Hospital	1	0	1	6	15	17	38	0
3	Sabt Al Alayah General Hospital	0	1	1	9	14	21	35	0
4	Rijal Almaa General Hospital	0	1	0	6	13	16	28	0
5	Tathleeth General Hospital	0	1	1	7	20	22	27	0
6	Al Farsha General Hospital	0	0	1	3	15	17	25	0
7	Sarat Obaidah General Hospital	0	1	1	5	18	30	24	0
8	Al Ghamah General Hospital	0	1	1	3	9	9	20	0
9	Balasmar General Hospital	0	1	0	3	16	16	14	0
10	Tabalah Hospital	0	1	1	5	10	11	10	0
11	Albirk General Hospital	0	0	1	2	7	8	7	0
12	Ballahmar General Hospital	0	0	1	1	5	5	5	0
13	Al Nammas General Hospital	0	1	0	3	7	7	4	0
14	Assir Central Hospital	0	0	0	0	0	0	0	0
15	Khamis Mushayt General Hospital	1	2	0	10	21	28	0	0
	Total	**2**	**11**	**12**	**81**	**208**	**248**	**288**	**0**

No	Dialysis Center Name	Non-Saudi Pts	New Pts.	HCV+ve pts.	HCV PCR +ve Pts.	HBsAg+ve Pts	HIV+ve Pts.	Pts < 15 Yrs	Pts > 75 yrs	Diabetic Pts (DM)	Hypertensiv Pts (HTN)	Both DM & HTN	HD Pts. Died
1	King Abdullah Hospital, Besha	3	21	0	0	1	0	0	10	22	12	13	0
2	Dharan Al Janoub Hospital	1	19	1	0	0	0	0	6	5	10	15	2
3	Sabt Al Alayah General Hospital	1	4	0	0	2	0	0	10	0	8	23	9
4	Rijal Almaa General Hospital	0	10	4	1	2	0	0	3	0	18	9	2
5	Tathleeth General Hospital	0	14	4	4	0	0	0	3	6	11	7	5
6	Al Farsha General Hospital	0	4	1	1	3	0	0	3	0	12	11	1
7	Sarat Obaidah General Hospital	0	7	0	0	0	0	0	5	0	10	13	2
8	Al Ghamah General Hospital	0	7	0	0	1	0	0	2	2	11	2	5
9	Balasmar General Hospital	0	2	0	0	0	0	0	1	1	3	7	1
10	Tabalah Hospital	0	1	0	0	0	0	0	0	2	1	7	0
11	Albirk General Hospital	0	2	1	0	0	0	0	0	0	4	2	0
12	Ballahmar General Hospital	0	1	0	0	0	0	0	2	0	0	4	0
13	Al Nammas General Hospital	0	0	1	0	0	0	0	2	0	2	2	2
14	Assir Central Hospital	0	0	0	0	0	0	0	0	0	0	0	0
15	Khamis Mushayt General Hospital	0	0	0	0	0	0	0	0	0	0	0	0
	Total	**5**	**92**	**12**	**6**	**9**	**0**	**0**	**47**	**38**	**102**	**115**	**29**

Table 3.1.6.13 Hemodialysis Patient's Characteristics in Saudi Arabia – MOH Sector Assir / Bisha Region

		Pts.	Blood Group				Sex		Vascular Access				
No	Dialysis Center Name	Total HD Pts.	A	B	AB	O	Male	Female	AVF	Vascular graft	Permanent jugular cath.	Permanent Femoral Cath.	Temporary Access
1	King Abdullah Hospital, Besha	51	11	5	5	30	29	22	15	0	33	3	0
2	Dharan Al Janoub Hospital	38	15	3	0	20	24	14	21	0	17	0	0
3	Sabt Al Alayah General Hospital	35	12	6	1	16	15	20	14	2	17	1	1
4	Rijal Almaa General Hospital	28	8	3	1	16	14	14	20	8	0	0	0
5	Tathleeth General Hospital	27	4	2	2	19	15	12	9	0	15	3	0
6	Al Farsha General Hospital	25	11	0	0	14	12	13	11	2	11	1	0
7	Sarat Obaidah General Hospital	24	12	0	12	0	13	11	12	1	11	0	0
8	Al Ghamah General Hospital	20	8	0	0	12	12	8	11	1	6	2	0
9	Balasmar General Hospital	14	6	2	0	6	10	4	7	1	6	0	0
10	Tabalah Hospital	10	2	3	2	3	6	4	9	0	1	0	0
11	Albirk General Hospital	7	4	0	0	3	3	4	4	0	0	0	3
12	Ballahmar General Hospital	5	3	1	0	1	3	2	3	0	2	0	0
13	Al Nammas General Hospital	4	1	0	0	3	2	2	2	0	2	0	0
14	Assir Central Hospital	0	0	0	0	0	0	0	0	0	0	0	0
15	Khamis Mushayt General Hospital	0	0	0	0	0	0	0	0	0	0	0	0
	Total	**288**	**97**	**25**	**23**	**143**	**158**	**130**	**138**	**15**	**121**	**10**	**4**

Table 3.1.6.14 Hemodialysis Centers in Saudi Arabia MOH Davita Outsourcing Dialysis Program

No.	Dialysis Center Name	Consultant Nephrologists	Nephrology Specialists	Resident Doctor	Nurses	No. of Outlet Connections	Total No. of HD Machines	Total HD Pts.	No. of Follow up Tx. Pts
1	Davita East, Jeddah	2	4	3	33	58	63	243	0
2	King Abdul Abdulaziz Specialist Hospital, Taif	2	4	2	36	58	58	228	0
3	Mohayel General Hospital	1	4	2	31	41	45	202	1
4	Davita 1, Buraida	2	3	2	23	48	53	166	0
5	Qateef Central Hospital	2	2	2	24	36	43	165	0
6	King Abdul Aziz Hospital, Jeddah (Davita)	2	2	2	25	52	53	164	0
7	Davita Health Care, Riyadh	1	2	1	18	33	36	118	0
8	Davita Clinic, Samtha	1	2	1	17	35	35	114	3
9	Davita, Makkah 1	1	3	1	19	35	39	114	0
10	Davita West, Madina 1	1	2	1	16	32	32	107	0
11	Abha Maternity and Pediatric Hospital	1	2	1	14	37	42	98	0
12	Davita 2, Buraida	1	2	1	12	28	29	98	0
13	King Faisal Hospital, Al Ahsa	1	3	1	17	30	35	98	0
14	Davita Kidney Care, Al Kharj	1	2	2	14	34	32	94	4
15	Davita Sabia Clinic	1	1	2	10	32	35	94	3
16	King Fahad Hospital, Tabuk	1	2	1	14	30	32	94	0
17	Davita, Jizan	1	1	2	13	30	33	80	0
18	Al Majardah General Hospital	1	1	2	12	21	22	79	0
19	South Riyadh, Azizia	1	1	2	13	25	25	77	0
20	Al Jaber Davita Clinic, Al Ahsa	1	1	1	12	32	35	71	0
21	Davita Madina 2	1	1	1	10	33	27	70	0
22	Davita Alkhobar Clinic	1	1	1	12	33	36	49	0
23	Imam Abdulrahman Al Faisal, Riyadh	1	1	1	8	14	16	41	0
	Total	**28**	**47**	**35**	**403**	**807**	**856**	**2664**	**11**

Table 3.1.6.14 Hemodialysis Patients in Saudi Arabia MOH Davita Outsourcing Dialysis Program

No	Dialysis Center Name	Non-Saudi Pts	New Pts.	HCV+ve pts.	HCV PCR +ve Pts.	HBsAg+ve Pts	HIV+ve Pts.	Pts < 15 Yrs	Pts > 75 yrs	Diabetic Pts (DM)	Hypertensiv Pts (HTN)	Both DM & HTN	HD Pts. Died
1	Davita East, Jeddah	0	74	18	0	9	0	0	18	6	104	119	20
2	King Abdul Abdulaziz Specialist Hospital, Taif	0	30	9	2	17	0	10	15	45	55	78	8
3	Mohayel General Hospital	0	0	27	0	14	0	0	22	70	80	52	21
4	Davita 1, Buraida	0	20	6	1	2	0	0	14	28	50	80	18
5	Qateef Central Hospital	0	26	18	0	3	0	0	10	27	27	97	20
6	King Abdul Aziz Hospital, Jeddah (Davita)	0	40	8	1	7	0	8	10	34	52	56	19
7	Davita Health Care, Riyadh	0	22	5	1	1	0	0	3	2	51	58	8
8	Davita Clinic, Samtha	0	0	16	1	6	0	0	14	16	24	44	8
9	Davita, Makkah 1	0	9	0	0	8	0	0	6	15	53	30	7
10	Davita West, Madina 1	0	9	8	0	3	0	0	12	15	30	37	5
11	Abha Maternity and Pediatric Hospital	0	14	13	0	2	0	0	14	2	35	40	14
12	Davita 2, Buraida	0	12	7	0	0	0	0	7	28	18	9	3
13	King Faisal Hospital, Al Ahsa	0	8	3	0	0	0	0	13	0	29	66	13
14	Davita Kidney Care, Al Kharj	0	16	6	0	0	0	0	4	7	35	20	11
15	Davita Sabia Clinic	0	17	0	2	4	0	0	4	19	29	21	15
16	King Fahad Hospital, Tabuk	0	13	11	0	0	0	0	2	29	40	15	4
17	Davita, Jizan	0	23	3	1	5	0	0	6	11	16	22	9
18	Al Majardah General Hospital	0	9	3	0	8	0	0	7	0	46	30	6
19	South Riyadh, Azizia	0	13	0	3	0	0	0	8	2	30	38	5
20	Al Jaber Davita Clinic, Al Ahsa	0	8	7	0	2	0	0	8	0	31	39	6
21	Davita Madina 2	0	13	1	0	0	0	0	3	10	4	45	7
22	Davita Alkhobar Clinic	0	15	0	0	0	0	0	3	5	10	28	5
23	Imam Abdulrahman Al Faisal, Riyadh	0	4	4	1	0	0	0	5	11	5	16	3
	Total	**0**	**395**	**173**	**13**	**91**	**0**	**18**	**208**	**382**	**854**	**1040**	**235**

Table 3.1.6.14 Hemodialysis patient's Characteristics in Saudi Arabia – MOH Davita Outsourcing Dialysis Program

		Pts.	Blood Group				Sex		Vascular Access				
No	Dialysis Center Name	Total HD Pts.	A	B	AB	O	Male	Female	AVF	Vascular graft	Permanent jugular cath.	Permanent Femoral Cath.	Temporary Access
1	Davita East, Jeddah	243	74	37	7	125	159	84	176	10	55	2	0
2	King Abdul Abdulaziz Specialist Hospital, Taif	228	59	43	11	115	92	136	168	4	46	10	0
3	Mohayel General Hospital	202	52	39	10	101	114	88	147	9	45	1	0
4	Davita 1, Buraida	166	30	41	6	89	83	83	112	4	48	2	0
5	Qateef Central Hospital	165	31	47	4	83	100	65	112	10	40	3	0
6	King Abdul Aziz Hospital, Jeddah (Davita)	164	80	14	10	60	76	88	130	7	23	4	0
7	Davita Health Care, Riyadh	118	35	20	10	53	65	53	77	14	25	2	0
8	Davita Clinic, Samtha	114	5	8	2	99	58	56	82	6	23	3	0
9	Davita, Makkah 1	114	31	20	3	60	51	63	70	6	29	9	0
10	Davita West, Madina 1	107	25	13	9	60	58	49	81	5	20	1	0
11	Abha Maternity and Pediatric Hospital	98	30	9	3	56	13	85	64	8	26	0	0
12	Davita 2, Buraida	98	19	22	3	54	62	36	77	0	19	2	0
13	King Faisal Hospital, Al Ahsa	98	20	19	3	56	52	46	78	3	14	3	0
14	Davita Kidney Care, Al Kharj	94	22	19	4	49	49	45	82	6	6	0	0
15	Davita Sabia Clinic	94	24	15	5	50	50	44	71	5	17	1	0
16	King Fahad Hospital, Tabuk	94	22	14	1	57	53	41	65	2	23	3	1
17	Davita, Jizan	80	23	6	4	47	44	36	51	9	16	4	0
18	Al Majardah General Hospital	79	20	6	1	52	42	37	49	5	24	1	0
19	South Riyadh, Azizia	77	18	12	3	44	49	28	49	2	23	3	0
20	Al Jaber Davita Clinic, Al Ahsa	71	22	14	4	31	43	28	55	7	9	0	0
21	Davita Madina 2	70	20	13	3	34	48	22	34	3	31	2	0
22	Davita Alkhobar Clinic	49	15	15	2	17	25	24	31	2	15	1	0
23	Imam Abdulrahman Al Faisal, Riyadh	41	11	9	1	20	20	21	31	0	8	2	0
	Total	**2664**	**688**	**455**	**109**	**1412**	**1406**	**1258**	**1892**	**127**	**585**	**59**	**1**

Table 3.1.6.15 Hemodialysis Centers in Saudi Arabia MOH Diaverum Outsourcing Dialysis Program

No.	Dialysis Center Name	Consultant Nephrologists	Nephrology Specialists	Resident Doctor	Nurses	No. of Outlet Connections	Total No. of HD Machines	Total HD Pts.	No. of Follow up Tx. Pts
1	Prince Abdul Majid Dialysis Center 9004, Jeddah	4	7	4	49	104	93	405	0
2	King Faisal Medical City 9007, Taif	1	3	2	31	59	65	206	0
3	Khamis Mushayt General Hospital, 9017	2	3	2	28	58	58	184	0
4	Prince Mohammad Bin Abdulaziz Hospital Hospital 9003, Riyadh	1	2	2	30	55	53	174	0
5	Diaverum North Jeddah 9012	2	2	2	28	33	33	165	1
6	Diaverum Renal Center Awali 9026, Makkah	1	3	3	26	30	33	150	0
7	Diaverum AB 9011, Makkah	1	2	2	26	30	33	145	0
8	Diaverum Abha, 9030	2	3	1	24	77	53	143	0
9	Diaverum 9034, Hail	2	2	2	20	40	44	138	0
10	King Saud Hospital 9009, Unaiza	1	2	2	20	41	45	131	0
11	Diavarum AB 9014, Dammam	1	2	1	25	30	34	127	0
12	Diaverum 9005, Al Hassa	1	2	1	22	30	33	124	0
13	Diaverum 9038, Skaka	1	2	2	20	46	46	115	4
14	Diaverum Kidney Center 9028, Buraidah	1	2	1	16	36	35	109	0
15	Diaverum 9037, Abu Arish	1	2	1	18	30	33	107	0
16	Diaverum Dammam 9020	2	1	1	18	30	33	106	0
17	Majduie, Dammam 3, 9019	1	2	7	18	33	33	106	0
18	Diaverum AB/Riyadh West Clinic 9008	1	2	2	19	29	32	105	0
19	Diaverum 9023, Madinah	1	2	1	16	30	33	98	0
20	Hafar Al baten Central Hospital 9033	1	2	1	14	30	33	98	0
21	Diaverum AB 9010, Madinah	1	2	1	16	30	33	94	0
22	New Najran General Hospital 9013	1	2	1	13	45	33	92	0
23	Yanbu General Hospital, Diaverum 9016	1	2	1	14	33	31	92	0
24	Al Omran General Hospital 9047	1	2	1	14	33	29	91	6
25	South Qunfudah General Hospital 9006	1	1	1	13	30	33	91	0
26	Al Rass General Hospital 9046	1	1	1	14	24	27	87	0
27	Baish General Hospital 9021	1	1	1	11	33	29	81	0
28	Qunfudah Dialysis Clinic 9041	1	1	1	11	33	35	75	0
29	Diaverum, Riyadh Central Ab 9029	1	1	2	12	30	29	74	0
30	Ahad Almasarha 9025	1	1	1	12	37	25	66	0

Table 3.1.6.15 Hemodialysis Centers in Saudi Arabia MOH Diaverum Outsourcing Dialysis Program (Continuation)

No.	Dialysis Center Name	Consultant Nephrologists	Nephrology Specialists	Resident Doctor	Nurses	No. of Outlet Connections	Total No. of HD Machines	Total HD Pts.	No. of Follow up Tx. Pts
31	Diaverum 9042, Dawadmi	0	2	1	10	22	21	56	0
32	Wadi Dawasir , Diaverum	1	1	1	10	22	23	55	0
33	Khulais General Hospital 9032	1	1	1	9	20	18	54	0
34	Namera Kidney Center 9052, Makkah	1	2	1	9	30	23	54	0
35	Diaverum Ar-Ar 9043	1	1	2	10	34	34	53	0
36	Gurrayat General Hospital 9035	1	1	1	10	28	28	51	0
37	Prince Meshari Bin Saud Kidney Center Beljurashi, 9031	1	1	2	8	30	28	47	2
38	Al Nammas General Hospital, 9048	0	1	2	6	22	22	37	0
39	Diaverum Clinic 9001, Al Khobar	1	0	2	8	20	22	35	0
	Total	**45**	**72**	**64**	**678**	**1407**	**1378**	**4221**	**13**

Table 3.1.6.15 Hemodialysis Patients in Saudi Arabia MOH Diaverum Outsourcing Dialysis Program

No	Dialysis Center Name	Non-Saudi Pts	New Pts.	HCV+ve pts.	HCV PCR +ve Pts.	HBsAg+ve Pts	HIV+ve Pts.	Pts < 15 Yrs	Pts > 75 yrs	Diabetic Pts (DM)	Hypertensiv Pts (HTN)	Both DM & HTN	HD Pts. Died
1	Prince Abdul Majid Dialysis Center 9004, Jeddah	0	33	53	4	15	9	0	29	23	144	171	54
2	King Faisal Medical City 9007, Taif	0	50	26	0	0	1	0	25	31	66	80	25
3	Khamis Mushayt General Hospital, 9017	0	19	13	0	4	0	0	19	80	50	22	11
4	Prince Mohammad Bin Abdulaziz Hospital Hospital 9003, Riyadh	0	7	1	0	3	0	0	14	26	56	68	11
5	Diaverum North Jeddah 9012	0	0	16	2	5	0	2	12	2	67	89	18
6	Diaverum Renal Center Awali 9026, Makkah	0	5	9	0	0	0	0	9	0	31	76	18
7	Diaverum AB 9011, Makkah	0	13	10	0	5	0	0	11	0	55	78	19
8	Diaverum Abha, 9030	0	16	10	1	3	0	0	18	78	21	30	19
9	Diaverum 9034, Hail	0	21	14	0	2	0	0	16	1	40	79	14
10	King Saud Hospital 9009, Unaiza	0	16	0	0	1	0	4	15	1	45	35	8
11	Diavarum AB 9014, Dammam	0	0	16	4	6	0	0	15	9	50	29	12
12	Diaverum 9005, Al Hassa	0	10	6	1	1	0	1	11	14	22	51	13
13	Diaverum 9038, Skaka	0	10	8	0	3	0	1	9	20	48	40	22
14	Diaverum Kidney Center 9028, Buraidah	0	6	4	0	0	0	0	9	30	40	20	10
15	Diaverum 9037, Abu Arish	0	21	11	1	4	0	0	10	0	67	33	12
16	Diaverum Dammam 9020	0	16	0	0	0	0	0	12	41	35	30	14
17	Majduie, Dammam 3, 9019	0	11	0	0	0	0	0	6	21	20	39	11
18	Diaverum AB/Riyadh West Clinic 9008	0	5	10	0	0	0	0	5	9	23	48	9
19	Diaverum 9023, Madinah	0	1	5	0	0	0	0	4	18	23	25	8
20	Hafar Al baten Central Hospital 9033	0	3	0	0	0	0	0	6	15	31	38	5
21	Diaverum AB 9010, Madinah	0	1	17	0	0	0	0	7	30	36	8	12
22	New Najran General Hospital 9013	0	3	4	1	4	0	0	16	14	29	36	12
23	Yanbu General Hospital, Diaverum 9016	0	10	7	1	2	0	0	7	15	38	5	5
24	Al Omran General Hospital 9047	0	6	1	0	0	0	0	3	15	20	56	20
25	South Qunfudah General Hospital 9006	0	21	15	2	4	0	0	7	38	32	17	17
26	Al Rass General Hospital 9046	0	7	0	0	1	0	0	10	10	44	25	14
27	Baish General Hospital 9021	0	11	4	0	9	0	0	7	12	26	32	14
28	Qunfudah Dialysis Clinic 9041	0	20	6	0	2	0	0	6	7	22	25	39
29	Diaverum, Riyadh Central Ab 9029	0	17	6	1	1	0	0	5	27	20	26	2
30	Ahad Almasarha 9025	0	15	5	0	4	0	0	6	0	44	22	11

Table 3.1.6.15 Hemodialysis Patients in Saudi Arabia MOH Diaverum Outsourcing Dialysis Program

No	Dialysis Center Name	Non-Saudi Pts	New Pts.	HCV+ve pts.	HCV PCR +ve Pts.	HBsAg+ve Pts	HIV+ve Pts.	Pts < 15 Yrs	Pts > 75 yrs	Diabetic Pts (DM)	Hypertensiv Pts (HTN)	Both DM & HTN	HD Pts. Died
31	Diaverum 9042, Dawadmi	0	2	4	2	1	0	0	11	0	19	35	3
32	Wadi Dawasir , Diaverum	0	0	1	0	3	0	0	1	31	10	10	5
33	Khulais General Hospital 9032	0	9	1	0	3	0	0	4	7	19	12	6
34	Namera Kidney Center 9052, Makkah	0	1	0	8	4	0	0	9	1	28	17	3
35	Diaverum Ar-Ar 9043	0	8	0	0	0	0	0	5	1	21	27	8
36	Gurrayat General Hospital 9035	0	1	6	0	3	0	1	8	10	18	13	5
37	Prince Meshari Bin Saud Kidney Center Beljurashi, 9031	0	5	3	3	1	0	0	5	18	4	8	1
38	Al Nammas General Hospital, 9048	0	17	2	0	0	0	0	7	3	5	21	3
39	Diaverum Clinic 9001, Al Khobar	7	6	3	1	1	0	0	1	0	9	25	2
	Total	**7**	**423**	**297**	**32**	**95**	**10**	**9**	**380**	**658**	**1378**	**1501**	**495**

Table 3.1.6.15 Hemodialysis Centers in Saudi Arabia MOH Diaverum Outsourcing Dialysis Program

		Pts.	Blood Group				Sex		Vascular Access				
No	Dialysis Center Name	Total HD Pts.	A	B	AB	O	Male	Female	AVF	Vascular graft	Permanent jugular cath.	Permanent Femoral Cath.	Temporary Access
1	Prince Abdul Majid Dialysis Center 9004, Jeddah	405	109	77	20	199	231	174	311	18	76	0	0
2	King Faisal Medical City 9007, Taif	206	56	33	4	113	140	66	147	9	50	0	0
3	Khamis Mushayt General Hospital, 9017	184	58	22	1	103	102	82	149	1	30	4	0
4	Prince Mohammad Bin Abdulaziz Hospital Hospital 9003, Riyadh	174	47	33	9	85	97	77	138	8	27	1	0
5	Diaverum North Jeddah 9012	165	46	31	5	83	102	63	117	6	39	3	0
6	Diaverum Renal Center Awali 9026, Makkah	150	47	25	10	68	82	68	131	6	12	1	0
7	Diaverum AB 9011, Makkah	145	36	26	8	75	83	62	110	0	0	0	35
8	Diaverum Abha, 9030	143	54	11	2	76	108	35	112	2	26	3	0
9	Diaverum 9034, Hail	138	42	44	3	49	77	61	99	3	35	1	0
10	King Saud Hospital 9009, Unaiza	131	24	32	7	68	71	60	96	4	31	0	0
11	Diavarum AB 9014, Dammam	127	36	25	5	61	80	47	102	9	12	4	0
12	Diaverum 9005, Al Hassa	124	23	26	3	72	68	56	102	5	17	0	0
13	Diaverum 9038, Skaka	115	25	35	5	50	63	52	83	6	22	4	0
14	Diaverum Kidney Center 9028, Buraidah	109	25	24	5	55	68	41	87	6	16	0	0
15	Diaverum 9037, Abu Arish	107	28	8	5	66	56	51	94	3	10	0	0
16	Diaverum Dammam 9020	106	22	16	0	68	73	33	82	6	18	0	0
17	Majduie, Dammam 3, 9019	106	28	24	3	51	71	35	90	4	12	0	0
18	Diaverum AB/Riyadh West Clinic 9008	105	24	17	3	61	60	45	89	2	13	1	0
19	Diaverum 9023, Madinah	98	32	16	6	44	60	38	74	1	20	3	0
20	Hafar Al baten Central Hospital 9033	98	26	19	5	48	59	39	88	1	9	0	0
21	Diaverum AB 9010, Madinah	94	29	14	1	50	60	34	65	3	20	6	0
22	New Najran General Hospital 9013	92	25	17	5	45	40	52	56	5	24	7	0
23	Yanbu General Hospital, Diaverum 9016	92	25	10	3	54	53	39	68	5	19	0	0
24	Al Omran General Hospital 9047	91	11	23	1	56	47	44	76	2	11	2	0
25	South Qunfudah General Hospital 9006	91	19	10	3	59	39	52	73	4	13	1	0
26	Al Rass General Hospital 9046	87	22	16	4	45	41	46	70	2	15	0	0
27	Baish General Hospital 9021	81	23	7	3	48	51	30	70	2	9	0	0
28	Qunfudah Dialysis Clinic 9041	75	23	9	5	38	45	30	54	3	18	0	0
29	Diaverum, Riyadh Central Ab 9029	74	18	11	2	43	41	33	50	9	15	0	0
30	Ahad Almasarha 9025	66	17	8	1	40	30	36	53	2	11	0	0

Table 3.1.6.15 Hemodialysis Patient's Characteristics in Saudi Arabia MOH Diaverum Outsourcing Dialysis Program (Continuation)

		Pts.	Blood Group				Sex		Vascular Access				
No	Dialysis Center Name	Total HD Pts.	A	B	AB	O	Male	Female	AVF	Vascular graft	Permanent jugular cath.	Permanent Femoral Cath.	Temporary Access
31	Diaverum 9042, Dawadmi	56	8	16	2	30	26	30	45	1	10	0	0
32	Wadi Dawasir , Diaverum	55	12	13	2	28	28	27	44	11	0	0	0
33	Khulais General Hospital 9032	54	19	3	5	27	31	23	44	0	10	0	0
34	Namera Kidney Center 9052, Makkah	54	14	5	3	32	28	26	46	2	6	0	0
35	Diaverum Ar-Ar 9043	53	13	17	0	23	27	26	36	1	13	3	0
36	Gurrayat General Hospital 9035	51	13	7	4	27	21	30	43	1	7	0	0
37	Prince Meshari Bin Saud Kidney Center Beljurashi, 9031	47	10	6	1	30	28	19	37	1	9	0	0
38	Al Nammas General Hospital, 9048	37	13	2	2	20	26	11	30	0	7	0	0
39	Diaverum Clinic 9001, Al Khobar	35	12	6	1	16	18	17	23	3	9	0	0
	Total	**4221**	**1114**	**744**	**157**	**2206**	**2431**	**1790**	**3284**	**157**	**701**	**44**	**35**

Table 3.1.6.16 Hemodialysis Centers in Saudi Arabia GOVT. NON-MOH Hospitals

No.	Dialysis Center Name	Consultant Nephrologists	Nephrology Specialists	Resident Doctor	Nurses	No. of Outlet Connections	Total No. of HD Machines	Total HD Pts.	No. of Follow up Tx. Pts
1	Prince Sultan Military Medical City, Riyadh (Adult)	13	9	6	159	100	130	366	134
2	King Fahad Armed Forces Hospital, Jeddah	7	16	3	80	82	90	363	220
3	King Abdulaziz Medical City & National Guard Hospital, Riyadh	3	5	0	123	40	75	321	0
4	Armed Forces Hospital Southern Region, Khamis Mushayt	10	19	5	88	74	118	303	1140
5	King Salman Military Hospital Tabuk	5	5	2	64	38	63	209	386
6	Prince Mansour Hospital	8	9	0	51	45	45	203	0
7	Security Forces Hospital	3	3	5	37	46	53	184	0
8	King Faisal Specialist Hospital and Research Center, Riyadh	6	4	7	67	45	110	150	1650
9	King Fahad University Hospital, Al Khobar	6	4	0	40	31	31	109	20
10	King Faisal Specialist Hospital and Research Center, Jeddah	12	12	3	33	26	35	109	226
11	King Abdul Aziz Medical City, Ahsa (NG)	3	3	1	25	13	29	107	60
12	King Fahad Military Medical Complex, Dhahran	3	4	0	29	29	39	98	94
13	King Abdulaziz Medical City and National Guard, Jeddah	6	2	0	28	18	32	96	144
14	Johns Hopkins Health Center (ARAMCO), Dahran	4	0	0	31	21	35	94	84
15	Al Kharj Military Industrial Corp. Hospital, Riyadh	1	3	1	19	21	23	90	0
16	King Saud University Medical City, Riyadh	10	4	1	39	55	38	82	0
17	Royal Commission Medical Center, Yanbu	2	2	0	9	24	24	74	5
18	King Abdul Aziz University Hospital, Jeddah	12	7	0	37	35	35	72	0
19	Royal Commission Hospital- Jubail	2	1	0	16	24	28	65	20
20	Al Khafji Joint Operation Hospital	0	1	1	7	10	7	18	2
21	Prince Sultan Military Hospital Hospital, Madinah	1	1	3	12	6	6	17	0
22	Northern Area Armed Forces Hospital, Hafar Al Batin	1	0	0	6	8	8	14	0
23	Prince Sultan Military Medical City, Riyadh (Pediatric)	5	2	2	6	7	7	5	44
24	King Abdullah Specialized Children Hospital National Guard, Riyadh	3	2	0	22	8	18	3	4
25	Al Hada Armed Forces Hospital, Taif	8	9	10	8	14	12	2	1303
	Total	**134**	**127**	**50**	**1036**	**820**	**1091**	**3154**	**4939**

Table 3.1.6.16 Hemodialysis Patients in Saudi Arabia GOVT. NON-MOH Hospitals

No	Dialysis Center Name	Non-Saudi Pts	New Pts.	HCV+ve pts.	HCV PCR +ve Pts.	HBsAg+ve Pts	HIV+ve Pts.	Pts < 15 Yrs	Pts > 75 yrs	Diabetic Pts (DM)	Hypertensiv Pts (HTN)	Both DM & HTN	HD Pts. Died
1	Prince Sultan Military Medical City, Riyadh (Adult)	4	41	26	1	13	1	2	72	0	142	210	34
2	King Fahad Armed Forces Hospital, Jeddah	2	97	1	0	8	1	3	0	8	139	133	37
3	King Abdulaziz Medical City & National Guard Hospital, Riyadh	2	74	25	0	10	1	0	84	48	103	125	57
4	Armed Forces Hospital Southern Region, Khamis Mushayt	0	85	4	0	3	0	1	36	20	126	127	58
5	King Salman Military Hospital Tabuk	1	81	0	0	1	0	7	5	15	35	109	30
6	Prince Mansour Hospital	199	77	7	3	5	0	0	40	71	40	20	25
7	Security Forces Hospital	0	40	9	0	12	0	0	19	6	46	90	22
8	King Faisal Specialist Hospital and Research Center, Riyadh	2	25	23	23	3	0	6	16	17	32	52	20
9	King Fahad University Hospital, Al Khobar	4	24	5	1	0	0	0	9	20	40	49	11
10	King Faisal Specialist Hospital and Research Center, Jeddah	0	40	6	0	1	1	5	11	15	30	45	6
11	King Abdul Aziz Medical City, Ahsa (NG)	0	20	6	0	3	0	0	15	6	35	56	7
12	King Fahad Military Medical Complex, Dhahran	1	6	3	0	8	0	0	8	27	19	48	8
13	King Abdulaziz Medical City and National Guard, Jeddah	1	8	9	0	3	0	1	26	9	16	68	17
14	Johns Hopkins Health Center (ARAMCO), Dahran	3	54	1	0	0	0	1	26	14	26	44	24
15	Al Kharj Military Industrial Corp. Hospital, Riyadh	0	32	5	2	4	0	0	8	19	28	40	25
16	King Saud University Medical City, Riyadh	8	10	3	0	0	0	0	6	16	22	28	5
17	Royal Commission Medical Center, Yanbu	2	26	2	1	2	0	0	7	0	44	26	7
18	King Abdul Aziz University Hospital, Jeddah	46	12	1	1	0	0	20	0	16	20	18	0
19	Royal Commission Hospital- Jubail	4	12	5	1	1	0	0	11	0	15	32	3
20	Al Khafji Joint Operation Hospital	1	3	0	0	1	0	0	3	0	7	10	2
21	Prince Sultan Military Hospital Hospital, Madinah	0	0	0	0	0	0	0	2	1	6	9	2
22	Northern Area Armed Forces Hospital, Hafar Al Batin	1	11	1	0	1	0	0	2	0	2	9	1
23	Prince Sultan Military Medical City, Riyadh (Pediatric)	0	1	0	0	0	0	5	0	0	5	0	0
24	King Abdullah Specialized Children Hospital National Guard, Riyadh	0	0	0	0	0	0	3	0	0	0	0	0
25	Al Hada Armed Forces Hospital, Taif	2	0	0	0	0	0	0	0	1	1	0	0
	Total	**283**	**779**	**142**	**33**	**79**	**4**	**54**	**406**	**329**	**979**	**1348**	**401**

Table 3.1.6.16 Hemodialysis Patient's Characteristics in Saudi Arabia GOVT. NON-MOH Hospitals

		Pts.	Blood Group				Sex		Vascular Access				
No	Dialysis Center Name	Total HD Pts.	A	B	AB	O	Male	Female	AVF	Vascular graft	Permanent jugular cath.	Permanent Femoral Cath.	Temporary Access
1	Prince Sultan Military Medical City, Riyadh (Adult)	366	106	69	13	178	195	171	109	4	243	8	2
2	King Fahad Armed Forces Hospital, Jeddah	363	50	147	10	156	193	170	211	17	129	6	0
3	King Abdulaziz Medical City & National Guard Hospital, Riyadh	321	96	60	18	147	153	168	124	7	188	2	0
4	Armed Forces Hospital Southern Region, Khamis Mushayt	303	88	26	17	172	161	142	115	1	180	7	0
5	King Salman Military Hospital Tabuk	209	56	40	9	104	96	113	70	20	60	29	30
6	Prince Mansour Hospital	203	51	36	6	110	101	102	101	6	94	2	0
7	Security Forces Hospital	184	42	27	7	108	110	74	94	3	84	3	0
8	King Faisal Specialist Hospital and Research Center, Riyadh	150	37	44	16	53	70	80	95	33	19	3	0
9	King Fahad University Hospital, Al Khobar	109	23	21	8	57	61	48	36	5	64	4	0
10	King Faisal Specialist Hospital and Research Center, Jeddah	109	29	21	5	54	55	54	18	0	90	1	0
11	King Abdul Aziz Medical City, Ahsa (NG)	107	24	20	3	60	38	69	46	5	53	3	0
12	King Fahad Military Medical Complex, Dhahran	98	24	10	4	60	56	42	64	10	24	0	0
13	King Abdulaziz Medical City and National Guard, Jeddah	96	24	17	4	51	55	41	47	2	45	2	0
14	Johns Hopkins Health Center (ARAMCO), Dahran	94	23	17	4	50	55	39	39	25	27	3	0
15	Al Kharj Military Industrial Corp. Hospital, Riyadh	90	21	14	6	49	59	31	23	1	65	1	0
16	King Saud University Medical City, Riyadh	82	22	18	2	40	43	39	48	2	27	5	0
17	Royal Commission Medical Center, Yanbu	74	26	17	3	28	38	36	49	1	24	0	0
18	King Abdul Aziz University Hospital, Jeddah	72	20	9	3	40	38	34	27	1	42	1	1
19	Royal Commission Hospital-Jubail	65	21	12	2	30	37	28	30	0	30	5	0
20	Al Khafji Joint Operation Hospital	18	6	3	0	9	10	8	8	0	9	1	0
21	Prince Sultan Military Hospital Hospital, Madinah	17	6	2	1	8	8	9	12	0	5	0	0
22	Northern Area Armed Forces Hospital, Hafar Al Batin	14	4	4	0	6	5	9	5	0	7	0	2
23	Prince Sultan Military Medical City, Riyadh (Pediatric)	5	2	0	0	3	4	1	0	0	5	0	0
24	King Abdullah Specialized Children Hospital National Guard, Riyadh	3	0	2	0	1	2	1	0	0	3	0	0
25	Al Hada Armed Forces Hospital, Taif	2	0	0	0	2	2	0	0	0	0	0	2
	Total	**3154**	**801**	**636**	**141**	**1576**	**1645**	**1509**	**1371**	**143**	**1517**	**86**	**37**

Table 3.1.6.17 Hemodialysis Centers in Saudi Arabia Private & Charitable Hospitals

No.	Dialysis Center Name	Consultant Nephrologists	Nephrology Specialists	Resident Doctor	Nurses	No. of Outlet Connections	Total No. of HD Machines	Total HD Pts.	No. of Follow up Tx. Pts.
1	Hisham Attar Dialysis Center	0	0	3	19	52	66	229	0
2	Dr. Bassam Al Hemsi Medical Center	1	2	0	18	39	39	188	40
3	Dr. Suleiman Al Fakeeh Hospital, Jeddah	1	3	3	26	43	54	136	0
4	Charity Community Dialysis Center, Makkah	0	1	2	16	26	26	110	0
5	Al Salam Dialysis Center	1	0	3	13	25	25	102	4
6	Demas Dialysis Center	2	1	1	10	19	19	100	0
7	Dr. Erfan and Bagedo, Jeddah	3	3	0	22	24	28	95	0
8	Al Moosa General Hospital, Ahsa	3	2	0	28	27	47	85	0
9	Al Mansour Medical Center, Jeddah	1	0	1	6	25	23	84	0
10	Al Faisal Polyclinic, Jeddah	1	1	2	10	15	15	81	0
11	Dr. Ali Lehbi Dialysis Center,Takhasusi Branch, Riyadh	3	3	5	37	46	53	80	0
12	Dr. Abdulhadi Taher Charity Foundation	1	0	2	9	25	22	70	3
13	International Renal Care Center, Jeddah	1	1	1	12	30	30	69	2
14	Al Mana Hospital, Dammam	3	2	5	27	38	68	68	25
15	Al Takaful Al- Khairy K.D.C, Makkah	0	2	0	9	30	26	67	0
16	Dr. Abdurahman Baksh Hospital, Jeddah	1	1	0	13	23	18	63	0
17	Arab Medical Dar Dialysis Center, Riyadh	1	1	1	7	17	17	62	0
18	Abdulakarim Bakr Medical Center, Jeddah	1	2	0	10	21	18	59	0
19	Al Mouwasat Hospital, Dammam	3	1	0	0	20	30	57	24
20	Al Mouwasat Hospital, Qateef	1	1	0	10	18	25	57	0
21	Al Shomoly Medical Polyclinic	0	1	2	7	14	20	55	0
22	Al Faiha Medical Center	0	1	0	6	14	14	54	0
23	Saudi German Hospital, Riyadh	2	2	0	10	9	12	50	0
24	Al Ahsa Hospital	1	0	1	5	26	22	45	5
25	Al Khawalid kidney & dialysis Center, Riyadh	0	1	0	6	18	30	41	0
26	Al Mana General Hospital, Al Khobar	1	2	1	20	11	24	40	50
27	Riyadh Care Hospital	1	0	2	12	14	26	40	0
28	Saudi German Hospital, Jeddah	3	3	0	15	10	10	40	4
29	Dr. Suleiman Al Habeeb Medical Center Rayan, Riyadh	2	1	0	12	10	13	38	25
30	International Medical Center	3	3	0	13	8	14	38	0
31	Al Mana General Hospital, Al Hassa	1	0	2	16	17	37	35	0
32	Care National Hospital	2	0	1	13	13	16	35	4

Table 3.1.6.17 Hemodialysis Centers in Saudi Arabia Private & Charitable Hospitals (Continuation)

No.	Dialysis Center Name	Consultant Nephrologists	Nephrology Specialists	GP's	Nurses	No. of Outlet Connections	Total No. of HD Machines	Total HD Pts.	No. of Follow up Tx. Pts
33	Asia Dialysis Center, Makkah	1	0	0	4	21	13	33	0
34	Dr. Suleiman Al Habib Medical Center (Suweidi)	2	1	2	11	14	14	33	2
35	Taibah Dialysis Center, Madinah	1	0	1	4	20	14	32	0
36	New Al Jedani Hospital	1	1	1	3	9	10	30	0
37	Dr. A. Al Mishari Hospital, Riyadh	1	2	0	8	8	7	27	12
38	New Jeddah Clinic Hospital	1	0	0	4	10	15	24	4
39	Omran Dialsysis Center, Jeddah	0	2	0	3	15	15	24	0
40	Saudi German Hospital, Madina	0	1	2	4	10	10	24	0
41	Al Hammadi Hospital, Riyadh	1	1	0	6	10	7	22	8
42	Olaya Medical Complex Clinic	0	1	1	4	5	6	20	0
43	Jeddah Clinic Hospital Kandarah	0	1	1	2	5	5	18	0
44	Al Mustagbal Hospital, Jeddah	0	1	1	3	6	6	17	0
45	Saudi German Hospital, Abha	2	1	1	4	7	8	17	3
46	Basharahil Hospital, Makkah	1	1	0	2	5	5	15	0
47	Madina National Hospital	0	1	0	3	17	7	12	0
48	Dr. Suleiman Al Habeeb Medical Center, Qassim	2	0	0	2	7	7	11	0
49	Bugshan General Hospital, Jeddah	0	1	0	2	5	6	8	3
50	Kingdom Hospital, Riyadh	0	1	0	5	2	4	7	2
51	Abha International Private Hospital	1	2	0	0	0	0	0	0
	Total	**58**	**59**	**48**	**511**	**903**	**1046**	**2747**	**220**

Table 3.1.6.17 Hemodialysis Patients in Saudi Arabia Private & Charitable Hospitals

No	Dialysis Center Name	Non-Saudi Pts	New Pts.	HCV+ve pts.	HCV PCR +ve Pts.	HBsAg+ve Pts	HIV+ve Pts.	Pts < 15 Yrs	Pts > 75 yrs	Diabetic Pts (DM)	Hypertensiv Pts (HTN)	Both DM & HTN	HD Pts. Died
1	Hisham Attar Dialysis Center	229	78	24	0	11	0	0	6	0	158	60	30
2	Dr. Bassam Al Hemsi Medical Center	187	58	19	16	8	0	0	0	42	37	79	2
3	Dr. Suleiman Al Fakeeh Hospital, Jeddah	27	0	10	5	0	0	0	12	38	50	33	18
4	Charity Community Dialysis Center, Makkah	110	73	20	0	3	0	2	2	37	22	42	23
5	Al Salam Dialysis Center	102	15	3	0	0	0	0	7	20	40	30	10
6	Demas Dialysis Center	94	20	6	4	3	0	0	5	50	25	15	3
7	Dr. Erfan and Bagedo, Jeddah	40	12	8	1	0	0	0	2	42	30	20	18
8	Al Moosa General Hospital, Ahsa	1	23	0	4	1	0	1	12	1	15	68	20
9	Al Mansour Medical Center, Jeddah	84	15	12	0	0	0	0	1	13	38	14	7
10	Al Faisal Polyclinic, Jeddah	79	17	12	0	0	0	0	0	5	36	31	6
11	Dr. Ali Lehbi Dialysis Center,Takhasusi Branch, Riyadh	6	10	1	0	0	0	0	4	10	24	27	9
12	Dr. Abdulhadi Taher Charity Foundation	70	70	0	0	0	0	0	0	25	20	25	5
13	International Renal Care Center, Jeddah	53	18	0	0	4	0	0	11	10	23	18	15
14	Al Mana Hospital, Dammam	11	23	7	4	2	0	0	11	5	10	50	8
15	Al Takaful Al- Khairy K.D.C, Makkah	66	4	19	0	7	0	0	0	24	20	21	7
16	Dr. Abdurahman Baksh Hospital, Jeddah	50	15	0	0	0	0	0	5	4	24	20	4
17	Arab Medical Dar Dialysis Center, Riyadh	62	0	9	0	0	0	0	2	8	21	24	1
18	Abdulakarim Bakr Medical Center, Jeddah	58	0	6	1	0	0	0	2	0	29	20	10
19	Al Mouwasat Hospital, Dammam	4	25	2	0	2	0	0	10	11	6	39	20
20	Al Mouwasat Hospital, Qateef	0	20	2	4	0	0	0	8	16	12	26	6
21	Al Shomoly Medical Polyclinic	52	1	5	0	0	0	2	0	10	15	20	5
22	Al Faiha Medical Center	54	13	6	3	0	0	0	3	4	25	16	12
23	Saudi German Hospital, Riyadh	45	4	1	1	0	0	0	1	10	20	15	3
24	Al Ahsa Hospital	5	22	0	0	2	0	0	7	0	8	37	10
25	Al Khawalid kidney & dialysis Center, Riyadh	41	0	16	0	5	0	0	0	2	18	10	4
26	Al Mana General Hospital, Al Khobar	6	16	0	0	0	0	0	2	8	2	26	2
27	Riyadh Care Hospital	15	6	1	0	3	0	0	2	10	5	25	9
28	Saudi German Hospital, Jeddah	28	10	5	1	0	0	0	0	7	10	21	2
29	Dr. Suleiman Al Habeeb Medical Center Rayan, Riyadh	3	7	0	0	0	0	0	3	8	4	25	3
30	International Medical Center	7	8	2	0	0	0	0	4	9	15	9	4
31	Al Mana General Hospital, Al Hassa	0	9	3	2	0	0	0	6	1	7	22	8
32	Care National Hospital	19	4	0	0	0	0	0	4	5	16	9	7

Table 3.1.6.17 Hemodialysis Patients in Saudi Arabia Private & Charitable Hospitals (Continuation)

No	Dialysis Center Name	Non-Saudi Pts	New Pts.	HCV+ve pts.	HCV PCR +ve Pts.	HBsAg+ve Pts	HIV+ve Pts.	Pts < 15 Yrs	Pts > 75 yrs	Diabetic Pts (DM)	Hypertensiv Pts (HTN)	Both DM & HTN	HD Pts. Died
33	Asia Dialysis Center, Makkah	33	8	12	0	0	0	0	0	3	10	15	8
34	Dr. Suleiman Al Habib Medical Center (Suweidi)	4	11	3	0	0	0	1	6	2	10	18	2
35	Taibah Dialysis Center, Madinah	32	0	9	0	0	0	0	0	2	16	2	6
36	New Al Jedani Hospital	29	8	0	0	0	0	0	0	5	15	10	3
37	Dr. A. Al Mishari Hospital, Riyadh	21	13	1	1	0	0	1	2	0	18	9	5
38	New Jeddah Clinic Hospital	23	8	2	0	0	0	0	0	3	12	2	7
39	Omran Dialsysis Center, Jeddah	24	8	3	0	0	0	0	2	4	4	6	2
40	Saudi German Hospital, Madina	11	10	3	1	0	0	0	1	4	10	5	2
41	Al Hammadi Hospital, Riyadh	16	6	0	0	0	0	0	0	0	12	8	1
42	Olaya Medical Complex Clinic	18	6	0	0	0	0	0	1	0	9	11	0
43	Jeddah Clinic Hospital Kandarah	17	8	0	0	0	0	0	0	0	2	15	1
44	Al Mustagbal Hospital, Jeddah	17	10	3	0	2	0	0	2	2	6	3	0
45	Saudi German Hospital, Abha	10	6	2	0	0	0	0	0	0	7	10	0
46	Basharahil Hospital, Makkah	13	4	2	2	0	0	0	0	3	6	4	4
47	Madina National Hospital	4	4	1	0	0	0	0	0	6	4	2	3
48	Dr. Suleiman Al Habeeb Medical Center, Qassim	2	3	0	0	1	0	0	5	0	2	9	0
49	Bugshan General Hospital, Jeddah	8	4	0	0	0	0	0	0	0	6	2	0
50	Kingdom Hospital, Riyadh	3	3	0	0	0	0	0	2	2	2	2	0
51	Abha International Private Hospital	0	0	0	0	0	0	0	0	0	0	0	0
	Total	**1893**	**716**	**240**	**50**	**54**	**0**	**7**	**153**	**471**	**936**	**1030**	**335**

Table 3.1.6.17 Hemodialysis Patients in Saudi Arabia Private & Charitable Hospitals

		Pts.	Blood Group				Sex		Vascular Access				
No	Dialysis Center Name	Total HD Pts	A	B	AB	O	Male	Female	AVF	Vascular graft	Permanent jugular cath.	Permanent Femoral Cath.	Temporary Access
1	Hisham Attar Dialysis Center	229	76	34	11	108	165	64	181	1	39	4	4
2	Dr. Bassam Al Hemsi Medical Center	188	51	36	9	92	138	50	134	13	36	3	2
3	Dr. Suleiman Al Fakeeh Hospital, Jeddah	136	37	26	6	67	76	60	91	5	37	3	0
4	Charity Community Dialysis Center, Makkah	110	19	30	6	55	74	36	93	1	14	2	0
5	Al Salam Dialysis Center	102	10	18	4	70	60	42	80	0	18	1	3
6	Demas Dialysis Center	100	10	20	20	50	75	25	40	5	51	2	2
7	Dr. Erfan and Bagedo, Jeddah	95	29	24	9	33	64	31	33	22	35	1	4
8	Al Moosa General Hospital, Ahsa	85	22	16	4	43	57	28	47	16	22	0	0
9	Al Mansour Medical Center, Jeddah	84	25	13	8	38	59	25	67	2	12	3	0
10	Al Faisal Polyclinic, Jeddah	81	15	12	14	40	52	29	73	1	7	0	0
11	Dr. Ali Lehbi Dialysis Center,Takhasusi Branch, Riyadh	80	25	8	3	44	48	32	34	0	46	0	0
12	Dr. Abdulhadi Taher Charity Foundation	70	10	8	6	46	46	24	58	2	1	0	9
13	International Renal Care Center, Jeddah	69	27	5	1	36	48	21	44	2	21	2	0
14	Al Mana Hospital, Dammam	68	16	18	10	24	50	18	31	5	30	2	0
15	Al Takaful Al- Khairy K.D.C, Makkah	67	19	17	0	31	33	34	47	0	20	0	0
16	Dr. Abdurahman Baksh Hospital, Jeddah	63	17	12	6	28	47	16	34	1	28	0	0
17	Arab Medical Dar Dialysis Center, Riyadh	62	15	13	3	31	24	38	43	0	17	2	0
18	Abdulakarim Bakr Medical Center, Jeddah	59	15	17	4	23	29	30	31	3	25	0	0
19	Al Mouwasat Hospital, Dammam	57	17	15	5	20	38	19	29	4	23	1	0
20	Al Mouwasat Hospital, Qateef	57	15	11	3	28	32	25	21	6	27	3	0
21	Al Shomoly Medical Polyclinic	55	18	30	5	2	50	5	42	3	10	0	0
22	Al Faiha Medical Center	54	30	6	6	12	36	18	40	2	9	3	0
23	Saudi German Hospital, Riyadh	50	14	18	6	12	5	45	30	1	19	0	0
24	Al Ahsa Hospital	45	9	15	1	20	23	22	30	5	9	0	1
25	Al Khawalid kidney & dialysis Center, Riyadh	41	7	6	0	28	24	17	30	5	0	6	0
26	Al Mana General Hospital, Al Khobar	40	11	18	3	8	32	8	35	1	4	0	0
27	Riyadh Care Hospital	40	10	8	2	20	26	14	18	1	21	0	0
28	Saudi German Hospital, Jeddah	40	8	7	2	23	29	11	32	0	8	0	0
29	Dr. Suleiman Al Habeeb Medical Center Rayan, Riyadh	38	10	7	2	19	16	22	25	1	12	0	0
30	International Medical Center	38	7	11	4	16	15	23	18	6	14	0	0
31	Al Mana General Hospital, Al Hassa	35	10	9	1	15	23	12	16	4	15	0	0
32	Care National Hospital	35	8	6	0	21	27	8	14	19	1	1	0

Table 3.1.6.17 Hemodialysis Patient's Characteristics in Saudi Arabia Private & Charitable Hospitals (Continuation)

		Pts.	Blood Group				Sex		Vascular Access				
No	Dialysis Center Name	Total HD Pts.	A	B	AB	O	Male	Female	AVF	Vascular graft	Permanent jugular cath.	Permanent Femoral Cath.	Temporary Access
33	Asia Dialysis Center, Makkah	33	10	8	0	15	22	11	28	1	4	0	0
34	Dr. Suleiman Al Habib Medical Center (Suweidi)	33	0	2	3	28	21	12	18	1	14	0	0
35	Taibah Dialysis Center, Madinah	32	10	6	1	15	15	17	28	4	0	0	0
36	New Al Jedani Hospital	30	18	10	1	1	23	7	20	0	10	0	0
37	Dr. A. Al Mishari Hospital, Riyadh	27	7	9	2	9	17	10	4	1	20	1	1
38	New Jeddah Clinic Hospital	24	6	11	3	4	13	11	13	0	10	1	0
39	Omran Dialsysis Center, Jeddah	24	6	9	2	7	14	10	14	0	10	0	0
40	Saudi German Hospital, Madina	24	8	9	4	3	14	10	16	0	8	0	0
41	Al Hammadi Hospital, Riyadh	22	12	0	1	9	18	4	16	1	5	0	0
42	Olaya Medical Complex Clinic	20	5	4	1	10	16	4	15	0	5	0	0
43	Jeddah Clinic Hospital Kandarah	18	4	4	0	10	12	6	9	0	9	0	0
44	Al Mustagbal Hospital, Jeddah	17	4	2	1	10	13	4	8	0	9	0	0
45	Saudi German Hospital, Abha	17	7	3	4	3	12	5	12	2	3	0	0
46	Basharahil Hospital, Makkah	15	2	3	3	7	9	6	8	0	4	1	2
47	Madina National Hospital	12	2	2	6	2	8	4	6	1	4	1	0
48	Dr. Suleiman Al Habeeb Medical Center, Qassim	11	2	2	5	2	6	5	5	0	6	0	0
49	Bugshan General Hospital, Jeddah	8	2	4	0	2	5	3	5	1	2	0	0
50	Kingdom Hospital, Riyadh	7	0	3	1	3	5	2	1	0	6	0	0
51	Abha International Private Hospital	0	0	0	0	0	0	0	0	0	0	0	0
	Total	**2747**	**717**	**585**	**202**	**1243**	**1764**	**983**	**1767**	**149**	**760**	**43**	**28**

Table 3.1.6.18 Hemodialysis Centers in Saudi Arabia King Abdullah Project Hospitals

No.	Dialysis Center Name	Consultant Nephrologists	Nephrology Specialists	Resident Doctor	Nurses	No. of Outlet Connections	Total No. of HD Machines	Total HD Pts.	No. of Follow up Tx. Pts
1	King Abdullah Hemodialysis Project, Riyadh South Center	0	1	8	64	97	111	320	0
2	King Abdullah Hemodialysis Project, Riyadh North Center	2	0	8	60	101	101	280	0
3	King Abdullah Hemodialysis Project, Jeddah	0	9	0	63	122	82	266	0
4	King Abdullah Dialysis Project, Makkah	1	5	0	36	50	50	118	0
5	King Abdullah Project Hemodialysis, Al Madinah	2	0	3	27	48	55	114	0
6	King Abdullah Hemodialysis Project, Hail	1	1	2	14	40	40	90	0
	Total	**6**	**16**	**21**	**264**	**458**	**439**	**1188**	**0**

Table 3.1.6.18 Hemodialysis Patients in Saudi Arabia King Abdullah Project Hospitals

No	Dialysis Center Name	Non-Saudi Pts	New Pts.	HCV+ve pts.	HCV PCR +ve Pts.	HBsAg+ve Pts	HIV+ve Pts.	Pts < 15 Yrs	Pts > 75 yrs	Diabetic Pts (DM)	Hypertensiv Pts (HTN)	Both DM & HTN	HD Pts. Died
1	King Abdullah Hemodialysis Project, Riyadh South Center	2	80	13	4	6	0	0	31	48	106	112	12
2	King Abdullah Hemodialysis Project, Riyadh North Center	10	60	0	0	3	0	0	46	26	100	121	17
3	King Abdullah Hemodialysis Project, Jeddah	70	0	24	1	2	2	0	34	40	88	93	25
4	King Abdullah Dialysis Project, Makkah	18	2	4	1	2	0	0	10	30	38	40	6
5	King Abdullah Project Hemodialysis, Al Madinah	24	6	7	0	0	0	0	13	17	38	40	13
6	King Abdullah Hemodialysis Project, Hail	1	10	8	0	0	0	0	11	6	18	40	7
	Total	**125**	**158**	**56**	**6**	**13**	**2**	**0**	**145**	**167**	**388**	**446**	**80**

Table 3.1.6.18 Hemodialysis Patient's Characteristics in Saudi Arabia King Abdullah Project Hospitals

		Pts.	Blood Group				Sex		Vascular Access				
No	Dialysis Center Name	Total HD Pts.	A	B	AB	O	Male	Female	AVF	Vascular graft	Permanent jugular cath.	Permanent Femoral Cath.	Temporary Access
1	King Abdullah Hemodialysis Project, Riyadh South Center	320	83	61	16	160	182	138	156	26	105	5	28
2	King Abdullah Hemodialysis Project, Riyadh North Center	280	76	53	11	140	161	119	154	24	101	1	0
3	King Abdullah Hemodialysis Project, Jeddah	266	77	45	6	138	147	119	147	6	113	0	0
4	King Abdullah Dialysis Project, Makkah	118	38	25	10	45	59	59	72	6	31	9	0
5	King Abdullah Project Hemodialysis, Al Madinah	114	42	22	6	44	72	42	75	5	33	1	0
6	King Abdullah Hemodialysis Project, Hail	90	16	20	4	50	33	57	44	4	41	1	0
	Total	**1188**	**332**	**226**	**53**	**577**	**654**	**534**	**648**	**71**	**424**	**17**	**28**

Table 3.1.6.19 Total No. of Hemodialysis Centers in MOH Hospitals According to Region

No	Hemodialysis Center region wise	No. of HD units	Consultant Nephrologists	Nephrology Specialists	Resident Doctor	Nurses	No. of Outlet Connections	Total No. of HD Machines	Total HD Pts.	No. of Follow up Tx. Pts
1	Riyadh	30	36	53	68	475	507	749	1424	277
2	Assir	15	2	11	12	81	208	248	288	0
3	Qassim	12	7	7	18	90	132	191	352	6
4	Eastern	11	19	20	27	309	271	320	789	1553
5	Makkah/Jeddah/Taif	10	13	18	28	174	160	331	699	50
6	Madinah	9	10	14	10	129	318	301	488	0
7	Gizan	8	2	11	9	144	189	238	535	1
8	Hail	8	1	5	16	57	125	188	289	2
9	Tabuk	7	1	9	5	56	163	176	230	67
10	Najran	6	2	5	8	45	97	124	213	64
11	Northern Borders	6	2	5	12	62	111	113	188	70
12	Al Baha	6	0	4	10	24	95	76	152	0
13	Al Jouf	2	1	1	4	30	31	45	94	0
	Total	**130**	**96**	**163**	**227**	**1676**	**2407**	**3100**	**5741**	**2090**

Table 3.1.6.19 Hemodialysis Patients in Saudi Arabia in MOH Hospitals According to Region

No	Hemodialysis Center region wise	Non-Saudi Pts	New Pts.	HCV+ve pts.	HCV PCR +ve Pts.	HBsAg+ve Pts	HIV+ve Pts.	Pts < 15 Yrs	Pts > 75 yrs	Diabetic Pts (DM)	Hypertensiv Pts (HTN)	Both DM & HTN	HD Pts. Died
1	Riyadh	94	264	102	36	41	1	21	134	203	519	512	144
2	Assir	5	92	12	6	9	0	0	47	38	102	115	29
3	Qassim	44	121	17	5	9	0	1	34	63	144	114	32
4	Eastern	132	319	148	12	21	3	10	35	137	275	253	93
5	Makkah/Jeddah/Taif	18	172	87	19	34	0	0	54	83	203	369	36
6	Madinah	74	139	23	7	27	1	9	50	34	137	200	71
7	Gizan	212	62	50	21	31	0	7	29	104	229	103	27
8	Hail	12	108	16	4	5	0	0	41	53	104	109	30
9	Tabuk	22	28	6	6	6	1	0	10	33	90	58	30
10	Najran	63	52	12	2	16	0	0	30	65	35	80	23
11	Northern Borders	16	30	11	0	7	0	1	27	40	59	64	20
12	Al Baha	5	27	11	3	0	0	0	11	26	49	55	29
13	Al Jouf	4	41	6	1	0	0	0	7	6	37	38	17
	Total	**701**	**1455**	**501**	**122**	**206**	**6**	**49**	**509**	**885**	**1983**	**2070**	**581**

Table 3.1.6.19 Hemodialysis Patient's Characteristics in Saudi Arabia in MOH Hospitals According to Region

		Pts.	Blood Group				Sex		Vascular Access				
No	Dialysis Center Name	Total HD Pts.	A	B	AB	O	Male	Female	AVF	Vascular graft	Permanent jugular cath.	Permanent Femoral Cath.	Temporary Access
1	Riyadh	1424	372	275	51	726	796	628	657	66	664	32	5
2	Assir	288	97	25	23	143	158	130	138	15	121	10	4
3	Qassim	352	89	69	23	171	200	152	119	9	167	43	14
4	Eastern	789	188	156	50	395	474	315	424	28	311	24	2
5	Makkah/Jeddah/Taif	699	195	253	44	207	335	364	401	15	268	6	9
6	Madinah	488	115	70	16	287	261	227	294	25	158	9	2
7	Gizan	535	106	44	21	364	266	269	302	4	202	14	13
8	Hail	289	66	56	8	159	165	124	189	7	88	5	0
9	Tabuk	230	54	50	14	112	128	102	126	9	79	13	3
10	Najran	213	54	47	9	103	127	86	88	5	114	6	0
11	Northern Borders	188	42	53	7	86	106	82	110	1	71	6	0
12	Al Baha	152	38	20	5	89	76	76	86	4	58	2	2
13	Al Jouf	94	21	29	2	42	53	41	44	4	44	1	1
	Total	**5741**	**1437**	**1147**	**273**	**2884**	**3145**	**2596**	**2978**	**192**	**2345**	**171**	**55**

Table 3.1.6.20 Total No. of Hemodialysis Centers of MOH DAVITA Outsourcing Dialysis Program According to Region

No.	Hemodialysis Center region wise	No. of HD units	Consultant Nephrologists	Nephrology Specialists	Resident Doctor	Nurses	No. of Outlet Connections	Total No. of HD Machines	Total HD Pts.	No. of Follow up Tx. Pts
1	Makkah/Jeddah/Taif	4	7	13	8	113	203	213	749	0
2	Riyadh	4	4	6	6	53	106	109	330	4
3	Eastern	4	5	7	5	65	131	149	383	0
4	Gizan	3	3	4	5	40	97	103	288	6
5	Assir	3	3	7	5	57	99	109	379	1
6	Madinah	2	2	3	2	26	65	59	177	0
7	Qassim	2	3	5	3	35	76	82	264	0
8	Tabuk	1	1	2	1	14	30	32	94	0
	Total	**23**	**28**	**47**	**35**	**403**	**807**	**856**	**2664**	**11**

Table 3.1.6.20 Total No. Hemodialysis Patients in Saudi Arabia of MOH DAVITA Outsourcing Dialysis Program According to Region

No	Hemodialysis Center region wise	Non-Saudi Pts	New Pts.	HCV+ve pts.	HCV PCR +ve Pts.	HBsAg+ve Pts	HIV+ve Pts.	Pts < 15 Yrs	Pts > 75 yrs	Diabetic Pts (DM)	Hypertensiv Pts (HTN)	Both DM & HTN	HD Pts. Died
1	Makkah/Jeddah/Taif	0	153	35	3	41	0	18	49	100	264	283	54
2	Riyadh	0	55	15	5	1	0	0	20	22	121	132	27
3	Eastern	0	57	28	0	5	0	0	34	32	97	230	44
4	Gizan	0	40	19	4	15	0	0	24	46	69	87	32
5	Assir	0	23	43	0	24	0	0	43	72	161	122	41
6	Madinah	0	22	9	0	3	0	0	15	25	34	82	12
7	Qassim	0	32	13	1	2	0	0	21	56	68	89	21
8	Tabuk	0	13	11	0	0	0	0	2	29	40	15	4
	Total	**0**	**395**	**173**	**13**	**91**	**0**	**18**	**208**	**382**	**854**	**1040**	**235**

Table 3.1.6.20 Total No. Hemodialysis Patient's Characteristics in Saudi Arabia of MOH DAVITA Outsourcing Dialysis Program According to Region

		Pts.	Blood Group				Sex		Vascular Access				
No	Dialysis Center Name	Total HD Pts.	A	B	AB	O	Male	Female	AVF	Vascular graft	Permanent jugular cath.	Permanent Femoral Cath.	Temporary Access
1	Makkah/Jeddah/Taif	749	244	114	31	360	378	371	544	27	153	25	0
2	Riyadh	330	86	60	18	166	183	147	239	22	62	7	0
3	Eastern	383	88	95	13	187	220	163	276	22	78	7	0
4	Gizan	288	52	29	11	196	152	136	204	20	56	8	0
5	Assir	379	102	54	14	209	169	210	260	22	95	2	0
6	Madinah	177	45	26	12	94	106	71	115	8	51	3	0
7	Qassim	264	49	63	9	143	145	119	189	4	67	4	0
8	Tabuk	94	22	14	1	57	53	41	65	2	23	3	1
	Total	**2664**	**688**	**455**	**109**	**1412**	**1406**	**1258**	**1892**	**127**	**585**	**59**	**1**

Table 3.1.6.21 Total No. of Hemodialysis Centers of DIAVERUM Outsourcing Dialysis Program According to Region

No.	Hemodialysis Center region wise	No. of HD units	Consultant Nephrologists	Nephrology Specialists	Resident Doctor	Nurses	No. of Outlet Connections	Total No. of HD Machines	Total HD Pts.	No. of Follow up Tx. Pts
1	Makkah/Jeddah/Taif	9	13	22	17	202	369	366	1345	1
2	Eastern	7	8	11	14	119	206	217	687	6
3	Riyadh	5	4	8	8	81	158	158	464	0
4	Assir	3	4	7	5	58	157	133	364	0
5	Qassim	3	3	5	4	50	101	107	327	0
6	Madinah	3	3	6	3	46	93	97	284	0
7	Gizan	3	3	4	3	41	100	87	254	0
8	Northern Borders	2	2	2	3	20	62	62	104	0
9	Hail	1	2	2	2	20	40	44	138	0
10	Al Jouf	1	1	2	2	20	46	46	115	4
11	Najran	1	1	2	1	13	45	33	92	0
12	Al Baha	1	1	1	2	8	30	28	47	2
	Total	**39**	**45**	**72**	**64**	**678**	**1407**	**1378**	**4221**	**13**

Table 3.1.6.21 Total No. Hemodialysis Patients in Saudi Arabia of DIAVERUM Outsourcing Dialysis Program According to Region

No	Hemodialysis Center region wise	Non-Saudi Pts	New Pts.	HCV+ve pts.	HCV PCR +ve Pts.	HBsAg+ve Pts	HIV+ve Pts.	Pts < 15 Yrs	Pts > 75 yrs	Diabetic Pts (DM)	Hypertensiv Pts (HTN)	Both DM & HTN	HD Pts. Died
1	Makkah/Jeddah/Taif	0	152	136	16	38	10	2	112	109	464	565	199
2	Eastern	7	52	26	6	8	0	1	54	115	187	268	77
3	Riyadh	0	31	22	3	8	0	0	36	93	128	187	30
4	Assir	0	52	25	1	7	0	0	44	161	76	73	33
5	Qassim	0	29	4	0	2	0	4	34	41	129	80	32
6	Madinah	0	12	29	1	2	0	0	18	63	97	38	25
7	Gizan	0	47	20	1	17	0	0	23	12	137	87	37
8	Northern Borders	0	9	6	0	3	0	1	13	11	39	40	13
9	Hail	0	21	14	0	2	0	0	16	1	40	79	14
10	Al Jouf	0	10	8	0	3	0	1	9	20	48	40	22
11	Najran	0	3	4	1	4	0	0	16	14	29	36	12
12	Al Baha	0	5	3	3	1	0	0	5	18	4	8	1
	Total	**7**	**423**	**297**	**32**	**95**	**10**	**9**	**380**	**658**	**1378**	**1501**	**495**

Table 3.1.6.21 Total No. Hemodialysis Patient's Characteristics in Saudi Arabia of DIAVERUM Outsourcing Dialysis Program According to Region

		Pts.	Blood Group				Sex		Vascular Access				
No	Dialysis Center Name	Total HD Pts.	A	B	AB	O	Male	Female	AVF	Vascular graft	Permanent jugular cath.	Permanent Femoral Cath.	Temporary Access
1	Makkah/Jeddah/Taif	1345	369	219	63	694	781	564	1033	48	224	5	35
2	Eastern	687	158	139	18	372	416	271	563	30	88	6	0
3	Riyadh	464	109	90	18	247	252	212	366	31	65	2	0
4	Assir	364	125	35	5	199	236	128	291	3	63	7	0
5	Qassim	327	71	72	16	168	180	147	253	12	62	0	0
6	Madinah	284	86	40	10	148	173	111	207	9	59	9	0
7	Gizan	254	68	23	9	154	137	117	217	7	30	0	0
8	Northern Borders	104	26	24	4	50	48	56	79	2	20	3	0
9	Hail	138	42	44	3	49	77	61	99	3	35	1	0
10	Al Jouf	115	25	35	5	50	63	52	83	6	22	4	0
11	Najran	92	25	17	5	45	40	52	56	5	24	7	0
12	Al Baha	47	10	6	1	30	28	19	37	1	9	0	0
	Total	**4221**	**1114**	**744**	**157**	**2206**	**2431**	**1790**	**3284**	**157**	**701**	**44**	**35**

Table 3.1.6.22 Total of Hemodialysis Centers in GOVT. NON-MOH Hospitals According to Region

No	Hemodialysis Center region wise	No. of HD units	Consultant Nephrologists	Nephrology Specialists	Resident Doctor	Nurses	No. of Outlet Connections	Total No. of HD Machines	Total HD Pts.	No. of Follow up Tx. Pts
1	Riyadh	8	44	32	22	472	322	454	1201	1832
2	Makkah/Jeddah/Taif	6	53	55	16	237	220	249	845	1675
3	Eastern	7	19	13	2	154	136	177	505	280
4	Assir	1	10	19	5	88	74	118	303	1140
5	Tabuk	1	5	5	2	64	38	63	209	7
6	Madinah	2	3	3	3	21	30	30	91	5
	Total	**25**	**134**	**127**	**50**	**1036**	**820**	**1091**	**3154**	**4939**

Table 3.1.6.22 Total Hemodialysis Patients in Saudi Arabia in GOVT. NON-MOH Hospitals According to Region

No	Hemodialysis Center region wise	Non-Saudi Pts	New Pts.	HCV+ve pts.	HCV PCR +ve Pts.	HBsAg+ve Pts	HIV+ve Pts.	Pts < 15 Yrs	Pts > 75 yrs	Diabetic Pts (DM)	Hypertensiv Pts (HTN)	Both DM & HTN	HD Pts. Died
1	Riyadh	16	223	91	26	42	2	16	205	106	378	545	163
2	Makkah/Jeddah/Taif	250	234	24	4	17	2	29	77	120	246	284	85
3	Eastern	14	130	21	2	14	0	1	74	67	144	248	56
4	Assir	0	85	4	0	3	0	1	36	20	126	127	58
5	Tabuk	1	81	0	0	1	0	7	5	15	35	109	30
6	Madinah	2	26	2	1	2	0	0	9	1	50	35	9
	Total	**283**	**779**	**142**	**33**	**79**	**4**	**54**	**406**	**329**	**979**	**1348**	**401**

Table 3.1.6.22 Total Hemodialysis Patient's Characteristics in Saudi Arabia in GOVT. NON-MOH Hospitals According to Region

		Pts.	Blood Group				Sex		Vascular Access				
No	Dialysis Center Name	Total HD Pts.	A	B	AB	O	Male	Female	AVF	Vascular graft	Permanent jugular cath.	Permanent Femoral Cath.	Temporary Access
1	Riyadh	1201	326	234	62	579	636	565	493	50	634	22	2
2	Makkah/Jeddah/Taif	845	174	230	28	413	444	401	404	26	400	12	3
3	Eastern	505	125	87	21	272	262	243	228	45	214	16	2
4	Assir	303	88	26	17	172	161	142	115	1	180	7	0
5	Tabuk	209	56	40	9	104	96	113	70	20	60	29	30
6	Madinah	91	32	19	4	36	46	45	61	1	29	0	0
	Total	**3154**	**801**	**636**	**141**	**1576**	**1645**	**1509**	**1371**	**143**	**1517**	**86**	**37**

Table 3.1.6.23 Total of Hemodialysis Centers in Private & Charitable Sector According to Region

No.	Hemodialysis Center region wise	No. of HD units	Consultant Nephrologists	Nephrology Specialists	GP's	Nurses	No. of Outlet Connections	Total No. of HD Machines	Total HD Pts.	No. of Follow up Tx. Pts
1	Makkah/Jeddah/Taif	21	20	27	18	207	408	428	1342	17
2	Riyadh	16	18	19	15	172	252	297	852	93
3	Eastern	7	13	8	9	106	157	253	387	104
4	Madinah	4	2	2	5	20	72	53	138	3
5	Assir	2	3	3	1	4	7	8	17	3
6	Qassim	1	2	0	0	2	7	7	11	0
	Total	**51**	**58**	**59**	**48**	**511**	**903**	**1046**	**2747**	**220**

Table 3.1.6.23 Total Hemodialysis Patients in Saudi Arabia in Private & Charitable Sector According to Region

No	Hemodialysis Center region wise	Non-Saudi Pts	New Pts.	HCV+ve pts.	HCV PCR +ve Pts.	HBsAg+ve Pts	HIV+ve Pts.	Pts < 15 Yrs	Pts > 75 yrs	Diabetic Pts (DM)	Hypertensiv Pts (HTN)	Both DM & HTN	HD Pts. Died
1	Makkah/Jeddah/Taif	1097	323	143	10	27	0	2	56	229	556	396	179
2	Riyadh	640	162	68	25	19	0	4	35	163	261	313	66
3	Eastern	27	138	14	14	7	0	1	56	42	60	268	74
4	Madinah	117	84	13	1	0	0	0	1	37	50	34	16
5	Assir	10	6	2	0	0	0	0	0	0	7	10	0
6	Qassim	2	3	0	0	1	0	0	5	0	2	9	0
	Total	**1893**	**716**	**240**	**50**	**54**	**0**	**7**	**153**	**471**	**936**	**1030**	**335**

Table 3.1.6.23 Total Hemodialysis Patient's Characteristics in Saudi Arabia in Private & Charitable Sector According to Region

		Pts.	Blood Group				Sex		Vascular Access				
No	Dialysis Center Name	Total HD Pts.	A	B	AB	O	Male	Female	AVF	Vascular graft	Permanent jugular cath.	Permanent Femoral Cath.	Temporary Access
1	Makkah/Jeddah/Taif	1342	356	277	85	624	862	480	929	46	336	18	13
2	Riyadh	852	222	176	64	390	546	306	504	53	272	18	5
3	Eastern	387	100	102	27	158	255	132	209	41	130	6	1
4	Madinah	138	30	25	17	66	83	55	108	7	13	1	9
5	Assir	17	7	3	4	3	12	5	12	2	3	0	0
6	Qassim	11	2	2	5	2	6	5	5	0	6	0	0
	Total	**2747**	**717**	**585**	**202**	**1243**	**1764**	**983**	**1767**	**149**	**760**	**43**	**28**

Table 3.1.6.24 Total of Hemodialysis Centers King Abdullah Project Hospitals According to Region

No.	Hemodialysis Center region wise	No. of HD units	Consultant Nephrologists	Nephrology Specialists	Resident Doctor	Nurses	No. of Outlet Connections	Total No. of HD Machines	Total HD Pts.	No. of Follow up Tx. Pts
1	Riyadh	2	2	1	16	124	198	212	600	0
2	Makkah/Jeddah/Taif	2	1	14	0	99	172	132	384	0
3	Madina	1	2	0	3	27	48	55	114	0
4	Hail	1	1	1	2	14	40	40	90	0
	Total	**6**	**6**	**16**	**21**	**264**	**458**	**439**	**1188**	**0**

Table 3.1.6.24 Total Hemodialysis Patients in Saudi Arabia King Abdullah Project Hospitals According to Region

No	Hemodialysis Center region wise	Non-Saudi Pts	New Pts.	HCV+ve pts.	HCV PCR +ve Pts.	HBsAg+ve Pts	HIV+ve Pts.	Pts < 15 Yrs	Pts > 75 yrs	Diabetic Pts (DM)	Hypertensiv Pts (HTN)	Both DM & HTN	HD Pts. Died
1	Riyadh	12	140	13	4	9	0	0	77	74	206	233	29
2	Makkah/Jeddah/Taif	88	2	28	2	4	2	0	44	70	126	133	31
3	Madina	24	6	7	0	0	0	0	13	17	38	40	13
4	Hail	1	10	8	0	0	0	0	11	6	18	40	7
	Total	**125**	**158**	**56**	**6**	**13**	**2**	**0**	**145**	**167**	**388**	**446**	**80**

Table 3.1.6.24 Total Hemodialysis Patient's Characteristics in Saudi Arabia King Abdullah Project Hospitals According to Region

		Pts.	Blood Group				Sex		Vascular Access				
No	Dialysis Center Name	Total HD Pts.	A	B	AB	O	Male	Female	AVF	Vascular graft	Permanent jugular cath.	Permanent Femoral Cath.	Temporary Access
1	Riyadh	600	159	114	27	300	343	257	310	50	206	6	28
2	Makkah/Jeddah/Taif	384	115	70	16	183	206	178	219	12	144	9	0
3	Madina	114	42	22	6	44	72	42	75	5	33	1	0
4	Hail	90	16	20	4	50	33	57	44	4	41	1	0
	Total	**1188**	**332**	**226**	**53**	**577**	**654**	**534**	**648**	**71**	**424**	**17**	**28**

Table 3.1.6.25 Total of Hemodialysis Centers in All Sectors According to Region

No.	Hemodialysis Center region wise	No. of HD units	Consultant Nephrologists	Nephrology Specialists	Resident Doctor	Nurses	No. of Outlet Connections	Total No. of HD Machines	Total HD Pts.	No. of Follow up Tx. Pts
1	Makkah/Jeddah/Taif/Qunfudah	52	107	149	87	1032	1532	1719	5364	1743
2	Riyadh	65	108	119	135	1377	1543	1979	4871	2206
3	Eastern/Al Ahsa/Hafar Al Baten	36	64	59	57	753	901	1116	2751	1943
4	Assir	24	22	47	28	288	545	616	1351	1144
5	Jizan	14	8	19	17	225	386	428	1077	7
6	Madinah	21	22	28	26	269	626	595	1292	8
7	Qassim	18	15	17	25	177	316	387	954	6
8	Tabuk	9	7	16	8	134	231	271	533	74
9	Hail	10	4	8	20	91	205	272	517	2
10	Northern Borders/Qurrayat	8	4	7	15	82	173	175	292	70
11	Najran	7	3	7	9	58	142	157	305	64
12	Al Jouf	3	2	3	6	50	77	91	209	4
13	Al Baha	7	1	5	12	32	125	104	199	2
	Total	**274**	**367**	**484**	**445**	**4568**	**6802**	**7910**	**19715**	**7273**

Table 3.1.6.25 Total of Hemodialysis Patients in Saudi Arabia in All Sectors According to Region

No	Hemodialysis Center region wise	Non-Saudi Pts	New Pts.	HCV+ve pts.	HCV PCR +ve Pts.	HBsAg+ve Pts	HIV+ve Pts.	Pts < 15 Yrs	Pts > 75 yrs	Diabetic Pts (DM)	Hypertensiv Pts (HTN)	Both DM & HTN	HD Pts. Died
1	Makkah/Jeddah/Taif/Qunfudah	1453	1036	453	54	161	14	51	392	711	1859	2030	584
2	Riyadh	762	875	311	99	120	3	41	507	661	1613	1922	459
3	Eastern/Al Ahsa/Hafar Al Baten	180	696	237	34	55	3	13	253	393	763	1267	344
4	Assir	15	258	86	7	43	0	1	170	291	472	447	161
5	Jizan	212	149	89	26	63	0	7	76	162	435	277	96
6	Madinah	217	289	83	10	34	1	9	106	177	406	429	146
7	Qassim	46	185	34	6	14	0	5	94	160	343	292	85
8	Tabuk	23	122	17	6	7	1	7	17	77	165	182	64
9	Hail	13	139	38	4	7	0	0	68	60	162	228	51
10	Northern Borders/Qurrayat	16	39	17	0	10	0	2	40	51	98	104	33
11	Najran	63	55	16	3	20	0	0	46	79	64	116	35
12	Al Jouf	4	51	14	1	3	0	1	16	26	85	78	39
13	Al Baha	5	32	14	6	1	0	0	16	44	53	63	30
	Total	**3009**	**3926**	**1409**	**256**	**538**	**22**	**137**	**1801**	**2892**	**6518**	**7435**	**2127**

Table 3.1.6.25 Total of Hemodialysis Patient's Characteristics in Saudi Arabia in All Sectors According to Region

		Pts.	Blood Group				Sex		Vascular Access				
No	Dialysis Center Name	Total HD Pts.	A	B	AB	O	Male	Female	AVF	Vascular graft	Permanent jugular cath.	Permanent Femoral Cath.	Temporary Access
1	Makkah/Jeddah/Taif/Qunfudah	5364	1453	1163	267	2481	3006	2358	3530	174	1525	75	60
2	Riyadh	4871	1274	949	240	2408	2756	2115	2569	272	1903	87	40
3	Eastern/Al Ahsa/Hafar Al Baten	2751	659	579	129	1384	1627	1124	1700	166	821	59	5
4	Assir	1351	419	143	63	726	736	615	816	43	462	26	4
5	Jizan	1077	226	96	41	714	555	522	723	31	288	22	13
6	Madinah	1292	350	202	65	675	741	551	860	55	343	23	11
7	Qassim	954	211	206	53	484	531	423	566	25	302	47	14
8	Tabuk	533	132	104	24	273	277	256	261	31	162	45	34
9	Hail	517	124	120	15	258	275	242	332	14	164	7	0
10	Northern Borders/Qurrayat	292	68	77	11	136	154	138	189	3	91	9	0
11	Najran	305	79	64	14	148	167	138	144	10	138	13	0
12	Al Jouf	209	46	64	7	92	116	93	127	10	66	5	1
13	Al Baha	199	48	26	6	119	104	95	123	5	67	2	2
	Total	**19715**	**5089**	**3793**	**935**	**9898**	**11045**	**8670**	**11940**	**839**	**6332**	**420**	**184**

Table 3.1.6.26 Total of Hemodialysis Centers in All Sectors According to Global Region

No.	Hemodialysis Center Global Region	No. of HD units	Consultant Nephrologists	Nephrology Specialists	Resident Doctor	Nurses	No. of Outlet Connections	Total No. of HD Machines	Total HD Pts.	No. of Follow up Tx. Pts
1	Western	72	128	174	111	1270	2099	2249	6450	1751
2	Central	84	125	139	169	1647	1919	2447	6087	2342
3	Southern	52	34	78	66	603	1198	1305	2932	1217
4	Eastern	35	62	56	48	660	841	1035	2489	1813
5	Northern	31	18	37	51	388	745	874	1757	150
	Total	**274**	**367**	**484**	**445**	**4568**	**6802**	**7910**	**19715**	**7273**

Table 3.1.6.26 Total of Hemodialysis Patients in Saudi Arabia in All Sectors According to Global Region

No	Hemodialysis Center Global Region	Non-Saudi Pts	New Pts.	HCV+ve pts.	HCV PCR +ve Pts.	HBsAg+ve Pts	HIV+ve Pts.	Pts < 15 Yrs	Pts > 75 yrs	Diabetic Pts (DM)	Hypertensive Pts (HTN)	Both DM & HTN	HD Pts. Died
1	Western	1670	1275	510	64	195	14	60	473	857	2199	2379	705
2	Central	817	1207	364	108	139	5	46	617	836	2051	2349	580
3	Southern	295	494	205	42	127	0	8	308	576	1024	903	322
4	Eastern	171	549	218	31	50	1	13	237	378	668	1132	308
5	Northern	56	401	112	11	27	2	10	166	245	576	672	212
	Total	**3009**	**3926**	**1409**	**256**	**538**	**22**	**137**	**1801**	**2892**	**6518**	**7435**	**2127**

Table 3.1.6.26 Total of Hemodialysis Patient's Characteristics in Saudi Arabia in All Sectors According to Global Region

		Pts.	Blood Group				Sex		Vascular Access				
No	Hemodialysis Center Global Region	Total HD Pts.	A	B	AB	O	Male	Female	AVF	Vascular graft	Permanent jugular cath.	Permanent Femoral Cath.	Temporary Access
1	Western	6450	1747	1332	328	3043	3607	2843	4243	220	1818	98	71
2	Central	6087	1549	1209	303	3026	3445	2642	3368	303	2225	137	54
3	Southern	2932	772	329	124	1707	1562	1370	1806	89	955	63	19
4	Eastern	2489	595	525	119	1250	1469	1020	1467	160	801	56	5
5	Northern	1757	426	398	61	872	962	795	1056	67	533	66	35
	Total	**19715**	**5089**	**3793**	**935**	**9898**	**11045**	**8670**	**11940**	**839**	**6332**	**420**	**184**

Table 3.1.6.27 Total of Hemodialysis Centers in Saudi Arabia According to Sector

No	Hemodialysis Centers by Sectors	No. of HD units	Consultant Nephrologists	Nephrology Specialists	Resident Doctor	Nurses	No. of Outlet Connections	Total No. of HD Machines	Total HD Pts.	No. of Follow up Tx. Pts
1	Ministry of Health (MOH)	130	96	163	227	1676	2407	3100	5741	2090
2	MOH Diaverum	39	45	72	64	678	1407	1378	4221	13
3	MOH Davita	23	28	47	35	403	807	856	2664	11
4	Gov't Non-MOH Centers	25	134	127	50	1036	820	1091	3154	3063
5	Private and Charity Dialysis Centers	51	58	59	48	511	903	1046	2747	220
6	King Abdullah Hemodialysis Projects	6	6	16	21	264	458	439	1188	0
	Total	**274**	**367**	**484**	**445**	**4568**	**6802**	**7910**	**19715**	**5397**

Table 3.1.6.27 Total of Hemodialysis Patients in Saudi Arabia According to Sector

No	Hemodialysis Center region wise	Non-Saudi Pts	New Pts.	HCV+ve pts.	HCV PCR +ve Pts.	HBsAg+ve Pts	HIV+ve Pts.	Pts < 15 Yrs	Pts > 75 yrs	Diabetic Pts (DM)	Hypertensiv Pts (HTN)	Both DM & HTN	HD Pts. Died
1	Ministry of Health (MOH)	701	1455	501	122	206	6	49	509	885	1983	2070	581
2	MOH Diaverum	7	423	297	32	95	10	9	380	658	1378	1501	495
3	MOH Davita	0	395	173	13	91	0	18	208	382	854	1040	235
4	Gov't Non-MOH Centers	283	779	142	33	79	4	54	406	329	979	1348	401
5	Private and Charity Dialysis Centers	1893	716	240	50	54	0	7	153	471	936	1030	335
6	King Abdullah Hemodialysis Projects	125	158	56	6	13	2	0	145	167	388	446	80
	Total	**3009**	**3926**	**1409**	**256**	**538**	**22**	**137**	**1801**	**2892**	**6518**	**7435**	**2127**

Table 3.1.6.27 Total of Hemodialysis Patient's Characteristics in Saudi Arabia According to Sector

		Pts.	Blood Group				Sex		Vascular Access				
No	Dialysis Center Name	Total HD Pts.	A	B	AB	O	Male	Female	AVF	Vascular graft	Permanent jugular cath.	Permanent Femoral Cath.	Temporary Access
1	Ministry of Health (MOH)	5741	1437	1147	273	2884	3145	2596	2978	192	2345	171	55
2	MOH Diaverum	4221	1114	744	157	2206	2431	1790	3284	157	701	44	35
3	MOH Davita	2664	688	455	109	1412	1406	1258	1892	127	585	59	1
4	Gov't Non-MOH Centers	3154	801	636	141	1576	1645	1509	1371	143	1517	86	37
5	Private and Charity Dialysis Centers	2747	717	585	202	1243	1764	983	1767	149	760	43	28
6	King Abdullah Hemodialysis Projects	1188	332	226	53	577	654	534	648	71	424	17	28
	Total	**19715**	**5089**	**3793**	**935**	**9898**	**11045**	**8670**	**11940**	**839**	**6332**	**420**	**184**

3.2 Peritoneal Dialysis in the Kingdom of Saudi Arabia

Peritoneal Dialysis in the Kingdom of Saudi Arabia

3.2.1 Characteristic of Peritoneal Dialysis in KSA

3.2.1 Peritoneal dialysis

In 2020, a total of 41 active peritoneal dialysis centers were recorded from MOH, Gov't. Non-MOH, and Private dialysis centers. Among these centers, 22 centers were from MOH, 18 from Gov't Non-MOH, and 1 from private centers. Types of PD modalities were Automated/Continuous Cyclic Peritoneal Dialysis or (APD/CCPD) with 78% of patients, 13% were on Continuous Ambulating Peritoneal Dialysis (CAPD) and 9% were on Intermittent Peritoneal Dialysis (IPD).

In 2020, a total of 1,781 patients were on peritoneal dialysis, of these 594 were new patients. Age Distribution of patients with ESRD have shown that 86% were adults and 14% were pediatric age less than 15 (<15). Patient serology have shown that HCV+ve patient were 36 (2%) and HBsAg+ve patients 19 (1%).

Active PD patients and treatment modality

In 2020 Total PD patients have increased by 13% this year with a total of 1,781 PD patients. Patient treatment modality have shown that (CCPD/APD) was the most preferred with 1,389 patients, followed by CAPD 226 and IPD 166 patients. (See figure 3.2.1.1 trend of PD patients, figure 3.2.1.2 treatment modality 2020 and figure 3.2.1.3 trend of patient treatment modality)

Total active PD in KSA 1995-2020 **Figure 3.2.1.1**

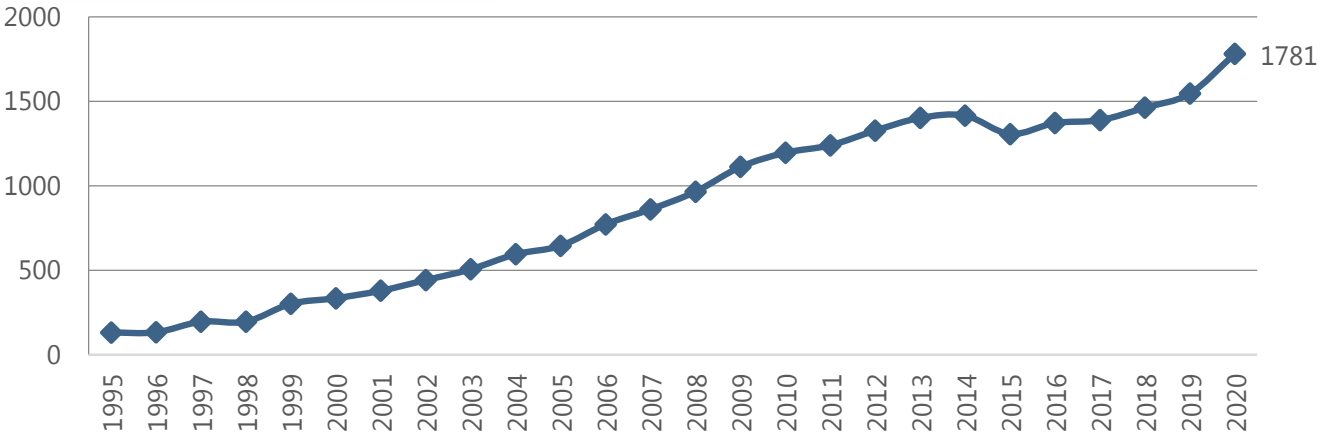


Figure 3.2.1.2 PD patient; treatment modality 2020

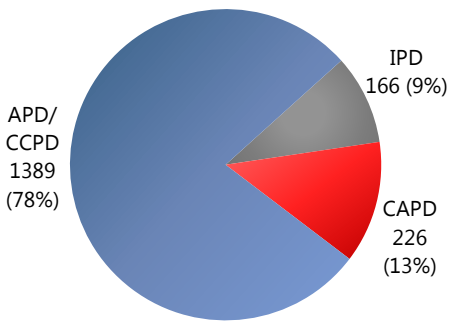
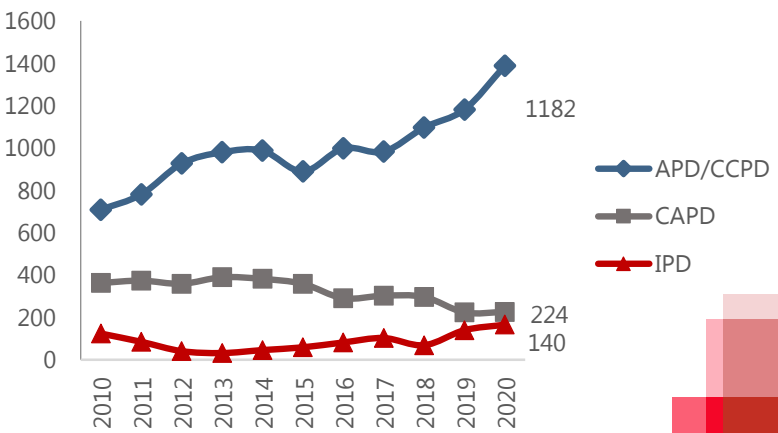


Figure 3.2.1.3 Trend of the modality of treatment among PD patients



Adult and pediatric PD patients

Among the 1,781 PD patients, 1,534 (86%) were adults and 247 (14%) were pediatric patients, age <15 years old. (See figure 5.2.1). Please see figure 5.2.2. for the trend of adult and pediatric PD patients since 2010.

Figure 3.2.1.4 PD patients; adult and pediatric 2020

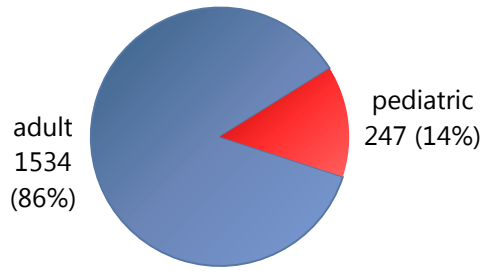
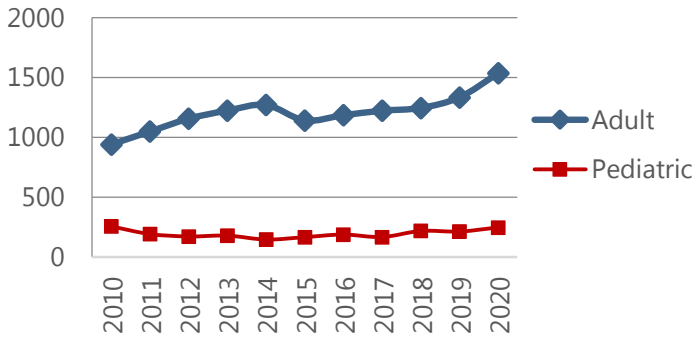


Figure 3.2.1.5 Trend of adult and pediatric PD patients 2020



Serology status of HBsAg and HCV among PD patients

In 2020, HBsAg+ve and HCV+ve status among PD patients were reported in SCOT and have shown that HBsAg+ve infected patients were 19 (1%) infection rate for the past 2 years. (See figures 3.2.1.6 and figure 3.2.1.7). HCV+ve PD patients during the year have shown infection rate of 2% comparable to last year. (See figures 5.3.3. and figure 5.3.4.).

Figure 3.2.1.6 PD patients; HBsAg status 2020

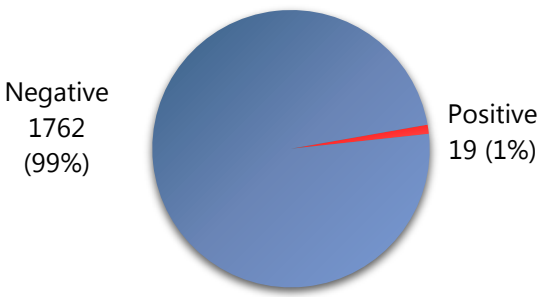


Figure 3.2.1.7 Trend of HBsAg status on PD patients

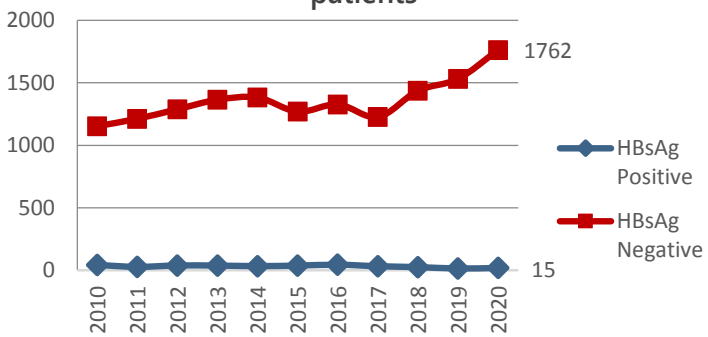
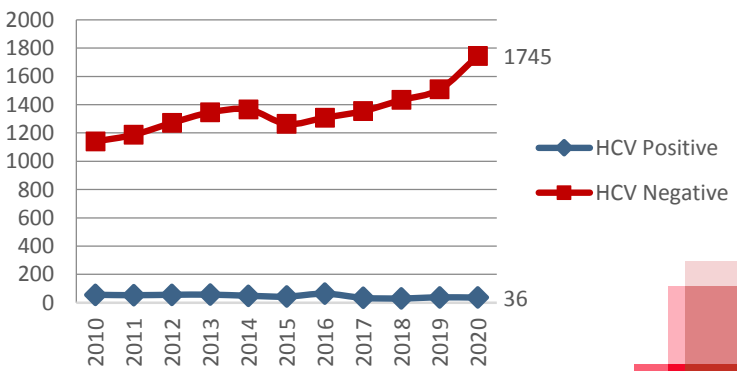


Figure 3.2.1.8 PD patients; HCV antibody status 2020

Figure 3.2.1.9 Trend of HCV status on PD patients

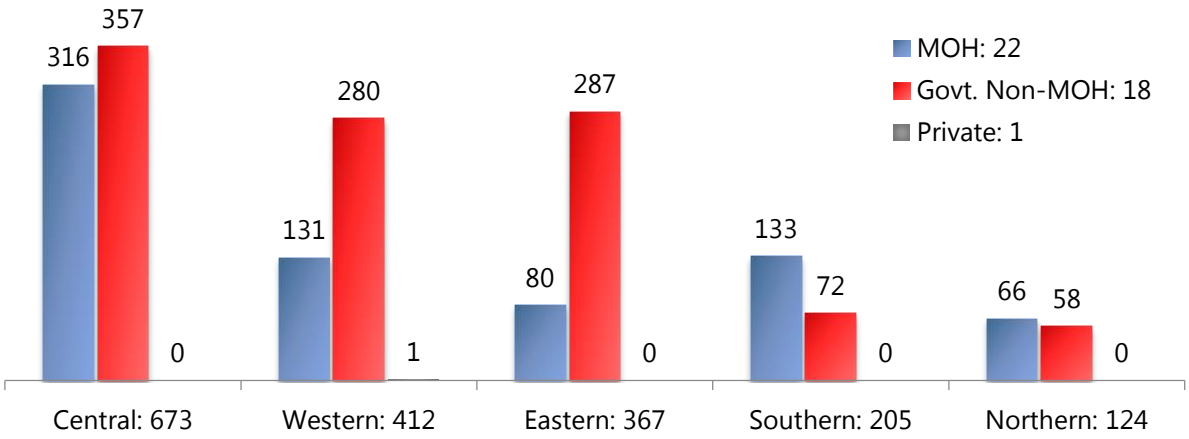


PD distribution region wise

PD patients distribution per region and affiliation were recorded. Central region have the most patients with (38%) followed by the western region (23%), Eastern (21%), Southern (11%) and Northern (7%). As per PD affilation Gov't Non-MOH has the most patient with 1,054 (59%), followed by the MOH 726 (41%) and Private Hospitals (0.0%) (figure 3.2.1.10 PD distribution region wise)

PD distribution region wise 2020

Figure 3.2.1.10



Peritoneal Dialysis in the Kingdom of Saudi Arabia

3.2.2 Statistical Tables

Table 3.2.2.1 Peritoneal Dialysis in the Kingdom of Saudi Arabia

No	Hospital Name	Total No. of Pts	New Pts 2019	Type of Peritoneal Dialysis			Pediatrics	Adults	HBsAg+ve	HCV+ve	No. of Non-Saudi Pts	No. of Deaths
				CAPD	IPD	CCPD/ APD						
1	King Fahad University Hospital, Al Khobar	269	60	3	0	266	8	261	1	3	0	11
2	King Saud Medical City, Riyadh	104	41	31	0	73	0	104	2	4	4	12
3	Al Hada Armed Forces Hospital, Taif	88	18	2	0	86	6	82	4	1	4	12
4	King Saud University Medical City, Riyadh	77	26	10	3	64	0	77	0	2	2	3
5	King Faisal Specialist Hospital and Research Center, Riyadh	76	23	11	0	65	23	53	0	2	1	1
6	King Fahd Specialist Hospital, Buraida	74	11	13	0	61	0	74	0	2	1	3
7	Armed Forces Hospital Southern Region, Khamis Mushayt	72	10	48	0	24	10	62	2	2	0	5
8	Prince Sultan Military Medical City, Riyadh (Adult)	70	22	12	17	41	0	70	0	2	4	4
9	King Fahad Armed Forces Hospital, Jeddah	67	35	14	0	53	5	62	2	1	2	6
10	King Faisal Specialist Hospital and Research Center, Jeddah	61	25	19	0	42	7	54	0	0	0	4
11	King Fahad Hospital, Madinah	58	27	5	34	19	2	56	0	0	3	5
12	King Salman Military Hospital Tabuk	58	21	0	58	0	7	51	0	0	0	4
13	Security Forces Hospital	56	29	4	0	52	0	56	1	0	0	6
14	King Fahad Central Hospital, Gizan	50	24	9	30	11	20	30	0	0	5	6
15	Dammam Medical Complex	48	17	0	0	48	0	48	0	0	1	5
16	King Fahad Hospital, Hofuf	47	15	0	0	47	0	47	0	2	2	3
17	King Khalid Hospital, Hail	44	22	0	0	44	0	44	1	0	0	2
18	Assir Central Hospital	43	12	5	0	38	0	43	0	0	2	4
19	King Abdul Aziz University Hospital, Jeddah	40	11	0	0	40	14	26	0	0	18	4
20	King Abdulaziz Medical City & National Guard Hospital, Riyadh	39	12	11	0	28	0	39	0	4	2	8
21	King Fahad Medical City Childrens Hospital, Riyadh	35	8	0	0	35	35	0	0	0	2	0
22	King Fahad Medical City, Riyadh	30	4	1	0	29	0	30	4	2	0	1
23	Al Noor Specialist Hospital	30	7	3	0	27	0	30	1	3	0	1

Table 3.2.2.1 Peritoneal Dialysis in the Kingdom of Saudi Arabia (Continuation)

No	Hospital Name	Total No. of Pts	New Pts 2019	Type of Peritoneal Dialysis			Pediatrics	Adults	HBsAg+ve	HCV+ve	No. of Non-Saudi Pts	No. of Deaths 2019
				CAPD	IPD	CCPD/ APD						
24	King Fahad Hospital Jeddah	25	4	0	0	25	1	24	0	0	0	3
25	King Abdulaziz Medical City and National Guard, Jeddah	22	5	5	9	8	6	16	0	1	0	6
26	King Abdullah Specialized Children Hospital National Guard, Riyadh	22	3	0	0	22	22	0	0	0	0	1
27	King Fahad Specialist Hospital, Dammam	21	1	0	0	21	21	0	0	1	0	2
28	King Saud Medical City, Riyadh (Pediatric)	20	7	0	0	20	20	0	0	0	6	1
29	King Khalid Hospital, Najran	20	11	9	0	11	1	19	0	3	9	0
30	Maternity and Children Hospital, Madina	18	2	0	0	18	18	0	0	0	3	4
31	Prince Sultan Military Medical City, Riyadh (Pediatric)	17	4	0	0	17	17	0	0	0	0	0
32	King Khalid Hospital, Tabuk	16	12	1	15	0	0	16	0	0	4	0
33	King Abdullah Hospital, Besha	12	5	1	0	11	0	12	0	1	0	2
34	Johns Hopkins Health Center (ARAMCO), Dahran	11	2	0	0	11	1	10	0	0	0	3
35	Al Jubail General Hospital	11	3	2	0	9	0	11	0	0	1	0
36	King Fahad Hospital, Al Baha	8	1	3	0	5	0	8	0	0	0	1
37	King Abdul Aziz Medical City, Ahsa (NG)	7	2	1	0	6	3	4	0	0	0	0
38	Ar-ar Central Hospital	6	2	1	0	5	0	6	0	0	0	0
39	King Salman for Kidney Disease Riyadh	6	0	1	0	5	0	6	1	0	0	2
40	Royal Commission Medical Center, Yanbu	2	1	0	0	2	0	2	0	0	1	0
41	Dr. Suleiman Al Fakeeh Hospital, Jeddah	1	0	1	0	0	0	1	0	0	0	0
	Total	**1781**	**545**	**226**	**166**	**1389**	**247**	**1534**	**19**	**36**	**77**	**135**

Table 3.2.2.2 Total Peritoneal dialysis in All Sector According to Global Region 2020

Hospital Name	No. of Hospitals	Total No. of Pts	New Pts	Type of Peritoneal Dialysis			Pediatrics	Adults	HBsAg+ve	HCV+ve	No. of Non-Saudi Pts	No. of Deaths 2019
				CAPD	IPD	CCPD /APD						
Central	14	673	205	94	20	559	117	556	8	20	24	45
Western	11	412	135	49	43	320	59	353	7	6	31	45
Eastern	6	367	85	6	0	361	33	334	1	4	2	21
Northern	4	124	57	2	73	49	7	117	1	0	4	6
Southern	6	205	63	75	30	100	31	174	2	6	16	18
Total	**41**	**1781**	**545**	**226**	**166**	**1389**	**247**	**1534**	**19**	**36**	**77**	**135**

Table 3.2.2.2 Total Peritoneal dialysis in All Sector According to Global Region 2020

Hospital Name	No. of Hospitals	Total No. of Pts	New Pts 2019	Type of Peritoneal Dialysis			Pediatrics	Adults	HBsAg+ve	HCV+ve	No. of Non-Saudi Pts	No. of Deaths 2019
				CAPD	IPD	CCPD /APD						
MOH Hospitals	22	726	236	85	79	562	118	608	9	18	43	57
GOVT. NON-MOH Hospitals	18	1054	309	140	87	827	129	925	10	18	34	78
Private Hospital	1	1	0	1	0	0	0	1	0	0	0	0
Total	**41**	**1781**	**545**	**226**	**166**	**1389**	**247**	**1534**	**19**	**36**	**77**	**135**

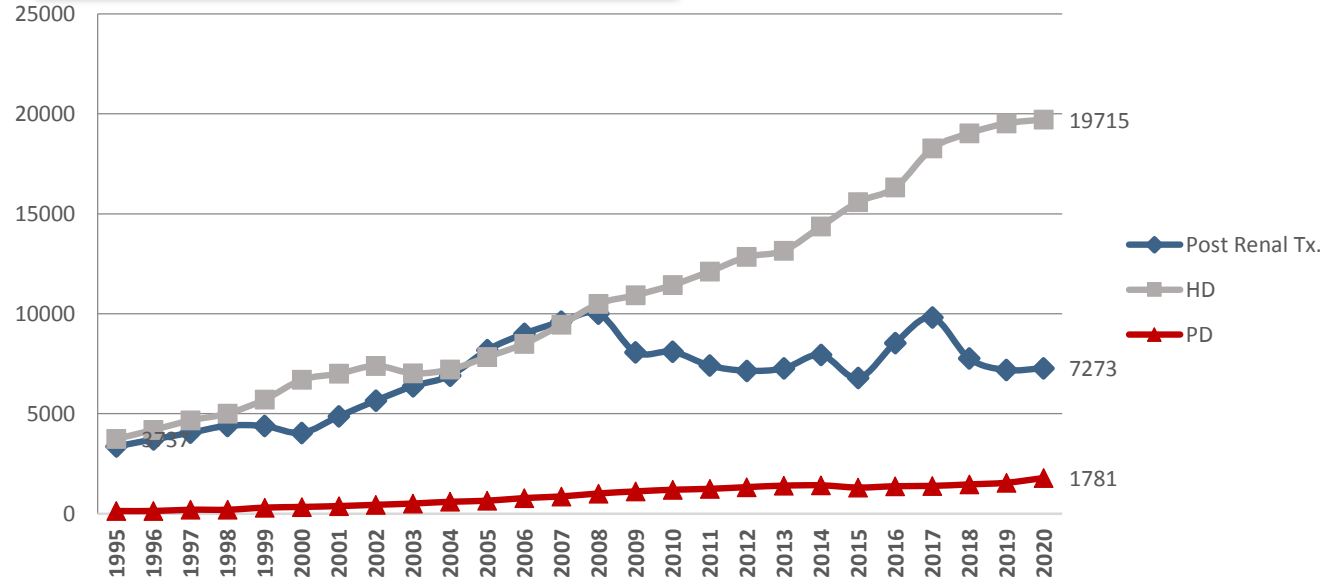
Dialysis in the Kingdom of Saudi Arabia

3.3.1 Summary of Renal Replacement Therapy

Figure 3.3.1.1 Dialysis Centers in KSA 2020; @Dialysis Centers; #More than one (1) Dialysis Center

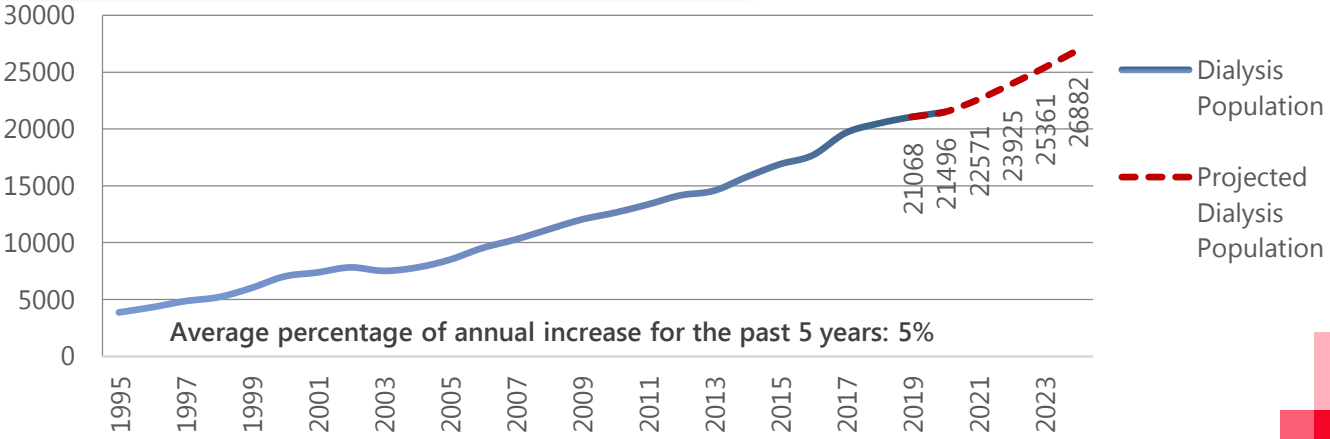
Renal Replacement Therapy in KSA 1995-2020

Figure 3.3.1.2



Dialysis population: current and projected: 1995-2023

Figure 3.3.1.3



Renal Replacement Therapy

In, Patients on renal replacement therapy were composed of HD patients which has a total of 19,715 (69%), then patients who had followed- up post-transplant 7,273 (25%) and patients on PD 1,781 (6%); see figure 6.1. The current and projected dialysis population had an average of 658 patients per year which is having a net annual increase of 7.7%.

Figure 3.3.1.4 Renal replacement therapy 2020

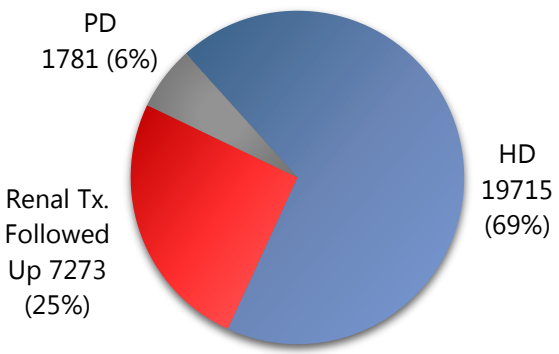


Table 3.3.1.1 Prevalence of dialysis patients (HD and PD) According to region 2020

Region	Population	Dialysis Pts. HD & PD	Prevalence (pmp)
Western	11,552,349	6862	594
Central	10,393,146	6760	650
Eastern	5,266,998	2856	542
Southern	5,152,795	3137	609
Northern	2,648,126	1881	710
Total	35,013,414	21,496	621

Table 3.3.1.2 Incidence of dialysis patients (HD and PD) According to region 2020

Region	Population	Dialysis Pts. HD & PD	Incidence (pmp)
Western	11,552,349	1410	122
Central	10,393,146	1412	136
Eastern	5,266,998	634	120
Southern	5,152,795	557	108
Northern	2,648,126	458	173
Total	35,013,414	4,471	132

Appendices

Responsibilities of the Saudi Center for Organ Transplantation (SCOT)

1. Setting up a national registry for end-stage organ failure patients, organ transplant recipients and organ donors with their follow-up and outcome, and setting up the necessary procedures.
2. Receiving and following-up of brain death cases in intensive care units, coordinating the removal of organs after getting the necessary approvals and distributing the organs to the organ transplant centers in the various health institutions in the Kingdom.
3. Coordinating with the concerned authorities to send medical teams to the various areas in the Kingdom and abroad, to remove the organs from the person mentioned in paragraph 2 of this clause and transplant it to a patient.
4. Cooperating and coordinating with the health authorities in the field of organ transplantation, both inside the Kingdom and abroad.
5. Preparing and updating the necessary procedures for organ transplantation from living donors in accordance with Sharia law restrictions.
6. Preparing and updating the policies and procedures (measures, descriptions, conditions and restrictions) related to organ transplantation in the Kingdom.
7. Monitoring and following-up on the application of organ transplantation programs, carrying out regular appraisals of the establishments and following-up with the specialized bodies.
8. Preparing administrative and financial roles for the personnel of the center, the researchers and those collaborating with it.
9. Holding symposia and conferences and educational and training programs, in the field of organ failure, organ donation and transplantation, on regional and international levels and holding orientation programs.
10. Offering awareness and educational health programs, in the field of organ failure and organ donation and transplantation in the community.
11. Publishing a scientific journal specializing in organ transplantation on the subjects of organ failure, organ donation and transplantation.
12. Taking part in scientific research related to organ transplantation and organ failure, in the Kingdom and abroad.
13. Cooperating with charities to support organ failure patients.

Regulations for Organ Transplantation in the Kingdom of Saudi Arabia

Regulations are essential to the process of organ donation and transplantation and therefore, the Higher National Committee for the Development of Organ Donation and Transplantation in the Kingdom of Saudi Arabia (KSA), which was formed according to the Ministerial resolution 14853/84 dated 30/2/1431, reviewed the regulations and passed them as follows:

Item 1: The following terms are defined as follows:

Council:	The Council for the Health Services
Center:	The Saudi Center for Organ Transplantation (SCOT)
Directory:	The Directory for Organ Donation and Transplantation in the KSA.

Item 2: Only authorized specialized physicians can perform organ transplantation from the living or deceased human donors to a human recipient with intention for cure and rescue according to the regulations included in this document.

Item 3: Any rightful person can donate or place a directive for donation of one of his body organs to rescue or treat a patient with end-stage organ failure. A statement should be signed by the donor as a will for donation. Nevertheless, only those who attain 18 years of age can donate to their relatives.

Item 4: Fully known medical investigations as advised by the specialist in the field should be performed before approving the organ donation from living donors. Full discussion of the risks and possible outcomes should be conducted with the donor before donation.

Item 5: Donors have the right to withdraw their consent for donation any time before the operation without penalties. No donor can claim his organ after transplantation is completed.

Item 6: It is prohibited for living donors to donate vital organs, donation of which could result in the death of the donor or complete disabling of vital functions.

Item 7: Organ donation can be from the persons only after full documentation of death by a committee of specialized physicians and in the absence of a directive by the donor objecting to donation during his life.

Item 8: Organ donations, as in item 7, can be performed if brain stem death is documented by the available means of technology.

Item 9: Commercial transplantation is prohibited in any manner.

Item 10: Transplantation is performed only in centers authorized by the Ministry of Health in the GCC Countries.

Item 11: Penalties will be levied in case of any violation of the above regulations according to system of the medical practice, after intensive investigation by the SCOT and the concerned authorities.

Memorandum by the Minister of Health on Deceased Organ Donation
Ref.: 328025/11 Dated: 17/12/1432H

Ref: 328025/11
Date: 17/12/1432H
13/11/2011G

Important Memo

His Excellency the Director of the National Guard Health Affairs

His Excellency the Executive Administrator of the General Organization

King Faisal Specialist Hospital and Research Center

Deputy Minister of Higher Education

His Excellency Deputy Minister for Executive Affairs

His Excellency Director General of Medical Services of the Armed Forces

Director General of Security Forces Hospital Program

Due to the importance of supporting the national program for organ donation and transplantation and the large increase in the number of patients on waiting lists for transplantation and the resulting health and social burden on the patients and financial burden on different health sectors , I appeal to the staff in all hospitals and especially those in the intensive care units, emergency departments, neurology and neurosurgical departments, and all relevant departments to cooperate with the **Saudi Center for Organ Transplantation** of the administration of each hospital to fulfill the following:

1. **Early Notification** of cases of brain death to Saudi Center for Organ Transplantation and considering that as the core tasks of intensive care physicians and other relevant departments.

2. **Support** for organ donation in the hospital and put the appropriate plan with the Saudi Center for Organ Transplantation for optimizing cases of organ donation after death and overcome the obstacles faced by.

3. **Facilitate continuous co**mmunication of medical and administrator coordinators inside the hospitals with intensive care units and emergency departments and relevant departments with respect to the organ donation and transplantation program.

DR. ABDULLAH BIN ABDELAZIZ AL RABEEAH

Minister of Health

Chairman of the Health Services Council

Memorandum by the Minister of Health on Deceased Organ Donation

Ref.: 130125 Dated: 14/21/1438H

Ministerial Resolution
No. 130125 Dated 14/21/1438H

The Minister of Health

According to his prerogative,

Based on the Council of Minister resolution no. 38 dated 26/01/1434H regarding the approval of the Saudi Center for Organ Transplantation Organization and assigning the center to prepare a general project for organ transplant program and take the action towards its application according to statutory procedures.

Based on the recommendation of the 71th meeting of the Saudi Health Council dated 07/05/1437H to support the program and find suitable solution to the obstacles which it faces.

Based on requirements of work interest.

1. Adopt assignment of medical and administrative coordinator in each of accredited hospital from SCOT with the specified duties enclosed within the resolution.

2. Medical coordinator will be an ICU physician; either specialists or consultant highly qualified to be the supervisor and responsible to follow up the program inside the hospital.

3. Administrative coordinator will be a specialist in social services department or patient relationship or religious affairs department and should be of a suitable and high qualification to be the responsible of administrative and social aspects of the program.

4. This resolution will be reported to whom it may concern to implement:

5. Copy to his Excellency, the Minister of Education

6. Copy to his Excellency, Deputy Minister of Health for Health Affairs

7. Copy to his Excellency, Deputy Minister of Health for Planning and Development

8. Copy to his Excellency, General Executive Director of Health Affairs in National Guard

9. Copy to his Excellency, General Executive Supervisor of King Faisal Specialist Hospital and Research Center.

10. Copy to his Excellency, General Director of the Health Service of General Administration in the Ministry of Defense

11. Copy to his Excellency, General Director of the Health Service of General Administration in the Ministry of Interior

12. Copy to his Excellency, General Secretariat of the Saudi Health Council

13. Copy to his Excellency, Deputy Ministry of Therapeutic Services

14. Copy to his Excellency, Deputy Minister of the Human Resources

15. Copy to his Excellency, Councilor of the Deputy Minister of Health Supervising Private Health Sector

16. Copy to his Excellency, Secretary General of the Board of Directors of Medical Cities and Specialized Hospitals

17. Original to General Director of Saudi Center for Organ Transplantation for Implementation.

Minister of Health

President of Saudi Health Council

Tawfiq bin Fawzan Al Rabiah

Official Statement of the National Committee for the Diagnosis of Death by Neurological Criteria and Ventilator System

The members of National Committee for diagnosis of death by Neurological Criteria held a meeting in Saudi Center for Organ Transplantation (SCOT) on Sunday 31/01/2010 (23/11/1431H) to discuss what has been published recently in the media about the reluctance of some medical doctors on the "fatwa" on removing the ventilator machine from brain dead case where some consider it as killing a person.

Accordingly the following steps were done by the committee:

- Review of these articles and international global scientific publications emerging on the subject.
- Review of the medical ethics of diagnosis of death by neurological criteria.
- Review the legal opinion "Fatwa" issued within the Kingdom of Saudi Arabia (Senior Ulama Commission) or abroad, especially the resolution of the Council of Islamic Jurisprudence on Resuscitation Apparatus.

Hence, we have decided unanimously the following:

1. The diagnosis of death by the time was, and continues to be a medical decision made by the experienced professionals.
2. The concept of brain death based on evidence has not undergone any recent disputing developments both in the definition or diagnosis using the Saudi protocol. Moreover, the protocol used within the Kingdom of Saudi Arabia is one of the most demanding protocols in the world.
3. According to the diagnosis of brain death by neurological criteria using the strict scientific protocol, the deceased person reaches the point of no return and no chance that he will regain his life.
4. It is permissible to remove the respirator from the persons diagnosed dead by the neurological criteria according to the scientific protocol applied in all the health institutions in the Kingdom and supervised by the committees of ethics and medical expertise.

The National Committee For The Diagnosis Of Death By Neurological Criteria

Dr. Mohammad Zuheir Alkawi
Chairman,
Senior Consultant Neurologist
King Faisal Specialist Hospital & Research Center, Riyadh

Dr. Abdullah Turki
Consultant Pediatric Intensivist,
Director, Pediatric Critical Care Unit
King Faisal Specialist Hospital & Research Center, Riyadh

Dr. Mohammed Al-Bar
Consultant, Islamic Medicine
King Abdul Aziz University - Jeddah

Dr. Mohammad Ibrahim Almajeed
Consultant Anesthesiologist,
King Khalid University Hospital – Riyadh

Dr. Nabil Biary
Consultant, Neurologist
Riyadh Military Hospital

Dr. Amin M. Yousef
Consultant Intensivist,
Riyadh Military Hospital

statement is approved by the Saudi Society of Critical Care (SCCS):

Dr. Yasser Mandourah
Consultant Intensivist,
Head, Saudi Society of Critical Care
Head, Intensive Care Unit
Riyadh Military Hospital

Dr. Awad Addasi
Consultant Intensivist,
Deputy Head, Saudi Society of Critical Care
Head, Intensive Care Unit
King Saud Medical Complex , Riyadh

Purport of the Senior Ulama Commission
Decision No. 99 Dated 06-11-1402 H

The board unanimously resolved the permissibility to remove an organ, or a part thereof from a Moslem or Thimmi living person and graft it onto him, should the need arise, should there be no risk in the removal and should the transplantation seem likely successful.

The board also resolved, by majority the following:

The permissibility to remove an organ or part thereof from a dead person for the benefit of a Moslem, should the need arise, should the removal cause no harm and should the transplantation seem likely successful.

The permissibility for the living person to donate one of his organs or part thereof for the benefit of a Moslem in need thereof.

Senior Ulama Commission.

Resolution of the Council of Islamic Jurisprudence on Resuscitation Apparatus Decision No. (5) D 3/07/86

The council of Islamic Jurisprudence in its third meeting held in Amman, capital of Jordan from 8 to 13 Safar 1407 H corresponding to 11 to 16 October 1986 and after discussing all relevant aspects of resuscitation apparatus and after hearing the detailed explanation from specialist doctors, decide the following:

A person is pronounced legally dead and consequently, all dispositions of the Islamic law in case of death apply if one of the two following conditions has been established:

There is total cessation of cardiac and respiratory functions, and doctors have ruled that such cessation is irreversible.

There is total cessation of all cerebral functions and experienced specialized doctors have ruled that such cessation is irreversible and that brain has started to undergo autolysis.

In this case, it is permissible to take the person off resuscitation apparatus, even if the function of some organs e.g., heart are still artificially maintained

Glossary, Abbreviation and Index

Brain Death

Irreversible cessation of cerebral and brain stem; characterized by the absence of electrical activity in the brain, blood flow to the brain, and brain function as determined by clinical assessment of responses. A brain dead person is dead, although his or her cardiopulmonary functioning may be artificially maintained for some time.

Critical Pathway of Deceased Organ Donation

Provides a systematic approach to the organ donation process, considering both donations after cardiac death than donation after brain death. The pathway provides a tool for assessing the potential of deceased donation and for the prospective identification and referral of possible deceased donors.

Donor

Someone from whom at least one organ or tissue is recovered for the purpose of transplantation. A deceased donor is a patient who has been declared brain death or cardiac death criteria.

Deceased Donor or DD

An individual from whom at least one solid organ is recovered or the purpose of transplantation after suffering brain death or cardiac death.

Living Donor

Is one who donates an organ or segment of an organ for the intent of transplantation.

Possible Deceased Organ Donor

A patient with a devastating brain injury or lesion or a patient with a circulatory failure and apparently medically suitable for organ donation

Potential DBD donor

A person whose clinical condition is suspected to fulfill brain death criteria.

Eligible DBD donor

A medically suitable person who has been declared dead based on neurologic criteria as stipulated by the law of the relevant jurisdiction.

Actual DBD donor

A Consented eligible donor:

a. In whom an operative incision was made with the intent of organ recovery for the purpose of transplantation.

b. From whom at least one organ was recovered for the purpose of transplantation.

Utilized DBD donor

An actual donor from whom at least one organ was transplanted.

Organ Donation

Organ Donation is the donation of biological tissue or an organ of the human body to a recipient in need of transplantation.

Living Organ Donation

Organ donation from living donor to living recipient

Deceased Organ Donation

Organ donation from deceased donor who is pronounced brain dead or circulatory death who is apparently medically suitable for organ donation

Organ Recovery / Procurement

The obtaining of organs for transplantation, which included methods of obtaining through programs, systems or organization. It includes also the transporting of donor organs, after surgical removal to the hospital for processing and transplant.

Organ Failure

Is altered organ function in an acutely ill patient requiring medical intervention to achieve homeostasis.

Organ Transplant

An operation moving an organ from one organism (donor) to another one (recipient)

Allograft

An organ or tissue that is transplanted from one person to another of the same species: i.e. human-to-human.

Biopsy

A tissue sample from the body, removed and examined under a microscope to diagnose for disease, determine organ rejection, or assess donated organ or tissues.

Chronic

Developing slowly and lasting for a long time, possible the rest of person's life. e.g. chronic kidney disease.

Split Liver Transplantation

The division of a donor liver into parts in order to transplant the tissue into a child or small recipient

Enbloc Kidney Transplantation

The transplant of both kidneys into a single receiver and using the donor aorta and vena cava for vascular anastomosis.

Cold Ischemia Time or CIT or in surgery

The time between the chilling of a tissue, organ, or body part after its blood supply has been reduced or cut off and the time it is warmed by having its blood supply restored. This can occur while the organ is still in the body or after it is removed from the body if the organ is to be used for transplantation.

Kidney Donor Risk Index or KDRI

Is an estimate of the relative risk of post-transplant kidney graft failure (in an average, adult recipient) from a particular deceased donor compared to the median (50th percentile) donor.

Expanded-criteria donors or ECD

Refer to older kidney donors (≥60 yr.) or donors who are aged 50 to 59 yr. and have two of the following three features: Hypertension, terminal serum creatinine>1.5 mg/dl, or death from cerebrovascular accident.

Standard Criteria Donor or SCD

Is a donor who is under 50 years of age and suffered brain death from any number of causes. This would include donors under the age of 50 who suffer from traumatic injuries or other medical problems such as a stroke.

List of Abbreviations

SCOT	Saudi Center for Organ Transplantation
NFK	National Kidney Foundation
DBD	Donation after Brain Death
DD	Deceased Donor
PMP	Per Million Population
CVA	Cerebrovascular accident
MVA	Motor Vehicle Accident
ICU	Intensive Care Unit
FFH	Fall from Height
DHT	Direct Head Trauma
CNS	Central Nervous System
GCC	Gulf Cooperation Council
MOH	Ministry of Health
Gov't	Government
HFV	Heart for Valves
HCV	hepatitis C Virus
TB	Tuberculosis
LR	Living Related
LUR	Living Unrelated
MSCT	Musculoskeletal Connective Tissue
SCD	Standard Criteria Donor
ECD	Expanded-criteria donors
KDRI	Kidney Donor Risk Index
CIT	Cold Ischemia Time

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