

CHAPTER 7

BONE AND TISSUE TRANSPLANTATION

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7.0 INTRODUCTION

The first part of this chapter presents data on tissue allografts that have been distributed and data about recipient centres. These data were provided by Universiti Sains Malaysia (USM) Tissue Bank as the bank involves in human tissue procurement, processing, storage and distribution. However, there are other centres/hospitals that participated in these activities but did not report to NTR.

The second part presents data obtained from the Bone and Tissue Transplant Notification Form submitted by surgeons to NTR. The data is tabulated from 2004 to 2008 to identify the trend of tissue transplant activities. The notification is still very poor and the limited data has restricted further analysis and definitive conclusions could not be made.

Thus, the report does not reflect the actual magnitude of human tissue supply and transplant activity in the country. The deficiency would affect the evaluation and planning of the tissue transplant programme and service by the Ministry of Health and other organisations.

Aggressive and continuous effort has to be made to ensure that all cases of tissue allograft transplantation are reported. In addition, the Ministry of Health has to make new initiatives to enforce notification to NTR by other centres/hospitals that are involved in tissue allograft provision.

7.1 STOCK OF TISSUE ALLOGRAFTS AND HOSPITALS WHERE TISSUES ARE UTILISED FROM 2004 TO 2008

In 2008 and in the previous years, the main tissue allografts that were distributed were amniotic membranes and deep-frozen femoral heads (Table 7.1.1). USM Tissue Bank provided tissue allografts to the Ministry of Health hospitals, private hospitals and other sectors (Table 7.1.2 and 7.1.3).

Table 7.1.1 Types of Tissue Allografts Supplied by USM Tissue Bank, 2004-2008

Types of Tissue Allograft	No. of pieces					Total
	2004	2005	2006	2007	2008	
Deep Frozen Bone						
Knee Slices	1	0	0	0	0	1
Femur	9	7	5	2	7	30
Femoral Head	50	88	75	65	54	332
Humerus	1	3	0	2	2	8
Tibia	6	1	4	4	8	23
Radius	1	2	1	0	3	7
Ulna	0	3	0	0	0	3
Patella/ Bone-Patella-Bone	1	1	4	2	7	15
Others (Type not stated)	3	0	0	0	0	3
Deep Frozen Tendon						
Achilles Tendon	0	0	0	2	1	3
Quadriceps Tendon	0	0	0	0	5	5
Others (Type not stated)	0	0	1	3	3	7
Freeze Dried Bone						
Cancellous chip	17	19	37	2	27	102
Cortical	2	0	0	0	0	2
Cortico-cancellous	5	2	0	0	0	7
Others (Type not stated)	0	0	0	8	0	8
Skin						
Deep Frozen Skin	0	0	0	0	36	36
Amniotic membrane						
Air-dried & Glycerol Preserved	1128	64	379	175	2081	3827
Total	1224	190	506	265	2234	4419

Table 7.1.2 Hospitals/Other Sectors Using Bone, Tendon and Skin Allografts Provided by USM Tissue Bank, 2004-2008

Recipients	No. of pieces					
	2004	2005	2006	2007	2008	Total
MOH						
Hospital Sultanah Bahiyah, Alor Setar	1	10	6	2	0	19
Hospital Umum Sarawak, Kuching	3	13	10	6	3	35
Hospital Ipoh	0	4	9	3	0	16
Hospital Kemaman	0	0	10	0	0	10
Hospital Sultanah Nurzahirah, Kuala Terengganu	0	0	2	0	0	2
Hospital Melaka	1	0	0	3	0	4
Hospital Pulau Pinang	5	1	7	7	0	20
Queen Elizabeth Hospital, Kota Kinabalu	0	0	12	2	0	14
Hospital Raja Perempuan Zainab II, Kota Bharu	5	2	1	0	8	16
Hospital Seberang Jaya, Pulau Pinang	0	2	0	3	0	5
Hospital Selayang	0	0	3	0	0	3
Hospital Seremban	2	2	1	0	0	5
Hospital Sultanah Aminah, Johor Bahru	9	19	11	1	0	40
Hospital Sultan Ismail, Johor Bahru	0	0	0	2	73	75
Hospital Tengku Ampuan Afzan, Kuantan	0	1	2	0	0	3
Hospital Tengku Ampuan Rahimah, Klang	0	5	0	0	0	5
Hospital Muar	0	0	0	0	2	2
Total	26	59	74	29	86	274
University Hospitals						
HUSM	39	23	30	3	20	115
HUKM	3	2	3	5	0	13
UMMC	9	3	0	0	0	12
Total	51	28	33	8	20	140
Private and other sectors						
Amin Dental Surgery, Johor Bahru	0	0	0	5	0	5
Antal Rastu Sdn Bhd	0	0	2	0	0	2
Borneo Indah Sdn. Bhd.	0	0	0	0	4	4
Chong Dental Surgery, Seri Kembangan Selangor	0	0	0	1	0	1
Hospital Fatimah, Ipoh	1	12	0	2	11	26
Pantai Medical Centre, Air Keroh	0	0	5	0	0	5
Mahkota Medical Centre, Melaka	0	2	1	0	0	3
Hospital Tawakal, KL	0	0	0	3	9	12
Hospital Tung Shin, Kuala Lumpur	0	2	0	0	0	2
Jasa Dental Surgery, Kuala Lumpur	5	0	0	0	0	5
Johnson & Johnson Medical	0	0	0	2	16	18
Kemajuan Abadi Sdn. Bhd.	0	5	0	2	0	7
Klinik Pergigian Chong, Tangkak, Johor	0	0	0	1	0	1
Kota Bahru Medical Centre, Kota Bharu	0	0	2	0	0	2
Lam Wah Ee Hospital, Pulau Pinang	0	0	3	0	0	3
Normah Medical Center, Kuching	0	0	0	3	3	6
Pantai Medical Center, Bangsar	0	0	0	1	0	1
Island Hospital, Pulau Pinang	0	0	0	0	1	1
Sentosa Medical Centre, Kuala Lumpur	0	1	0	0	0	1
Sri Kota Medical Centre, Klang	2	0	0	0	0	2
Stryker	2	4	6	12	20	44
Sunway Medical Centre, Selangor	0	0	1	0	0	1
Teo Orthopaedic, Kuala Lumpur	0	10	0	0	0	10
Zimmer	9	3	0	21	18	51
Kuching Specialist Hospital, Sarawak	0	0	0	0	1	1
Total	19	39	20	53	83	214
Grand Total	96	126	127	90	189	628

Table 7.1.3 Hospitals/Other Sectors Using Amniotic Membranes provided by USM Tissue Bank, 2004-2008

Recipients	No. of pieces					Total
	2004	2005	2006	2007	2008	
Ministry of Health						
Hospital Miri, Sabah	0	0	0	5	10	15
Hospital Kuala Lumpur	22	15	13	40	0	90
Hospital Sultanah Bahiyah, Alor Setar	0	0	2	7	0	9
Hospital Umum Sarawak, Kuching	6	10	0	6	1	23
Hospital Sultanah Nurzahirah, Kuala Terengganu	0	1	0	5	0	6
Hospital Melaka	5	5	10	0	5	25
Hospital Pakar Sultanah Fatimah, Johor Bahru	0	0	100	0	0	100
Hospital Pulau Pinang	0	0	0	3	0	3
Queen Elizabeth Hospital, Kota Kinabalu	0	0	4	1	0	5
Hospital Raja Perempuan Zainab II, Kota Bharu	0	5	0	2	1	8
Hospital Selayang	0	0	1	0	0	1
Hospital Sultanah Aminah, Johor Bahru	73	0	200	0	0	273
Hospital Sultan Ismail, Johor Bahru	0	0	0	50	0	50
Hospital Teluk Intan	0	0	1	4	0	5
Hospital Tengku Ampuan Afzan, Kuantan	6	6	7	0	0	19
Hospital Tengku Ampuan Rahimah, Klang	4	5	0	0	0	9
Hospital Kuala Krai	0	0	0	0	1	1
Hospital Sungai Buloh	0	0	0	21	40	61
Total	116	47	338	144	58	703
University Hospitals						
HUSM	1001	1	8	7	4	1021
HUKM	4	0	0	7	32	43
UMMC	5	0	6	0	5	16
IIUM	0	0	0	6	0	6
Total	1010	1	14	20	41	1086
Private and other sectors						
Gleneagles Medical Centre, Pulau Pinang	2	4	8	0	6	20
Hospita Mata Tun Hussein Onn	0	4	0	0	5	9
Hospital Tawakal, KL	0	0	4	0	0	4
ISEC Sdn. Bhd.	0	0	0	2	0	2
Klinik Iman, Seremban	0	1	0	0	0	1
Kuala Terengganu Specialist Center, Kuala Terengganu	0	0	0	3	0	3
Peter Kong Eye Clinic, Kota Kinabalu	0	0	0	0	2	2
Pusat Rawatan Islam Al-Zahirah, Bangi, Selangor	0	0	10	0	0	10
Puteri Specialist Hospital, Johor Bahru	0	5	0	5	0	10
Putra Medical Centre, Alor Setar	0	0	1	1	0	2
Sri Kota Medical Centre, Klang	0	2	4	0	2	8
CryoCord Sdn. Bhd.	0	0	0	0	2081	2081
Total	2	16	27	11	2096	2152
Grand Total	1128	64	379	175	2195	3941

7.2 Reporting Centre

The recipient centres that reported to the National Transplant Registry using the Bone and Tissue Transplant Notification Form are shown on Table 7.2.1. The total number of reporting centres in 2008 has decreased compared to previous years.

Table 7.2.1 Distribution of Reporting Centre, 2004-2008

Reporting centre	2004	2005	2006	2007	2008	Total
Orthopaedics Department						
Department of Orthopaedics, HUSM	1	7	2	1	0	11
Institute of Orthopaedic & Traumatology, Hospital Kuala Lumpur	2	0	0	0	0	2
Department of Orthopaedics Surgery, UMMC	1	0	0	0	0	1
Department of Orthopaedics, Hospital Pulau Pinang	0	0	0	1	0	1
Department of Orthopaedics, Hospital Ipoh	0	1	0	0	0	1
Department of Orthopaedics, Hospital Raja Perempuan Zainab II	9	3	0	0	0	12
Department of Orthopaedics, Hospital Umum Sarawak	1	0	1	0	0	2
Department of Orthopaedics, Hospital Tengku Ampuan Afzan	0	0	0	1	0	1
Department of Orthopaedics, Hospital Sultanah Aminah	0	1	0	0	0	1
Wan Orthopaedic, Trauma & Sports Injury Centre (WOTSIC), Seremban Specialist Hospital	0	0	2	0	0	2
Department of Orthopaedics, Island Hospital, Pulau Pinang	0	1	0	0	0	1
Department of Orthopaedics, Normah Medical Specialist Centre, Kuching	0	1	0	0	0	1
Department of Orthopaedics, Hospital Fatimah, Ipoh	0	3	0	1	0	4
Department of Orthopaedics, Kota Bharu Medical Centre	0	0	2	0	0	2
Department of Orthopaedics, Pantai Medical Centre, Kuala Lumpur	0	0	0	1	0	1
Department of Orthopaedics, Gleneagles Medical Centre, Pulau Pinang	0	0	0	0	1	1
Department of Orthopaedics, Penang Adventis Hospital, Pulau Pinang	0	0	0	0	1	1
Spine Unit, HUSM	0	0	1	0	0	1
Total	14	17	8	5	2	46
Ophthalmology Department						
Department of Ophthalmology, Hospital Tengku Ampuan Rahimah, Klang	1	1	0	0	0	2
Department of Ophthalmology, Hospital Tengku Ampuan Afzan, Kuantan	1	1	0	0	0	2
Department of Ophthalmology, Hospital Teluk Intan	0	0	1	0	0	1
Department of Ophthalmology, Hospital Kuala Lumpur	0	0	23	20	15	58
Department of Ophthalmology, Hospital Sultanah Bahiyah, Alor Setar	0	0	1	0	0	1
Department of Ophthalmology, Hospital Sungai Buloh	0	0	0	9	0	9
Department of Ophthalmology, Hospital Umum Sarawak	0	0	0	0	1	1
Department of Ophthalmology, Sri Kota Medical Centre, Klang	0	1	0	0	0	1
Department of Ophthalmology, HUSM	0	0	1	2	2	5
Pusat Pakar Mata Centre For Sight	0	0	0	0	1	1
Total	2	3	26	31	19	81
Others						
Maxillofacial Surgery, HUSM	1	1	0	0	0	2
Timberland Medical Centre, Kuching	0	1	0	0	0	1
Sri Kota Medical Centre, Klang	0	0	1	0	0	1
Total	1	2	1	0	0	4
Grand Total	17	22	35	36	21	131

7.3 Recipients Details

The bone and tissue allografts recipients' gender (Table 7.3.1), ethnicity (Table 7.3.1), age (Table 7.3.3) and diagnosis (Table 7.3.4) are presented in this section. One patient can undergo more than 1 transplant.

Table 7.3.1 Distribution of Number of Transplant by Gender, 2004-2008

Gender	2004		2005		2006		2007		2008		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Male	9	53	10	45	27	77	21	58	9	43	76	58
Female	8	47	12	55	8	23	15	42	12	57	55	42
Total	17	100	22	100	35	100	36	100	21	100	131	100

Table 7.3.2 Distribution of Number of Transplant by Ethnic Group, 2004-2008

Race	2004		2005		2006		2007		2008		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Malay	11	65	14	64	26	74	18	50	11	52	80	61
Chinese	3	18	5	23	7	20	12	33	6	29	33	25
Indian	1	6	1	5	1	3	4	11	1	5	8	6
Bumiputra Sabah	0	0	0	0	0	0	0	0	1	5	1	1
Bumiputra Sarawak	1	6	0	0	0	0	1	3	0	0	2	2
Others	1	6	2	9	1	3	1	3	2	10	7	5
Total	17	100	22	100	35	100	36	100	21	100	131	100

Table 7.3.3 Distribution of Number of Transplant by Age Group, 2004-2008

Age group	2004		2005		2006		2007		2008		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
0-9	0	0	1	5	4	11	5	14	4	19	14	11
10-11	1	6	6	27	2	6	1	3	5	24	15	11
20-39	9	53	6	27	16	46	8	22	5	24	44	34
40-59	5	29	3	14	8	23	11	31	4	19	31	24
≥60	2	12	5	23	5	14	10	28	3	14	25	19
Missing	0	0	1	5	0	0	1	3	0	0	2	2
Total	17	100	22	100	35	100	36	100	21	100	131	100
Mean	37		36		37		42		30		37	
SD	16		23		20		23		23		22	
Median	35		27		36		49		27		35	
Min	15		7		0		0		1		0	
Max	75		80		77		80		69		80	

Table 7.3.4 Distribution of Number of Transplant by Diagnosis Warranting Tissue Graft, 2004-2008

Diagnosis	2004		2005		2006		2007		2008		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Congenital deformity	1	6	0	0	1	3	1	3	1	5	4	3
Infection	0	0	0	0	3	8	3	8	2	10	8	6
Trauma	5	28	1	5	6	16	1	3	1	5	14	10
Degenerative disease	1	6	2	9	0	0	1	3	1	5	5	4
Tumour - benign	5	28	4	18	1	3	1	3	0	0	11	8
Tumour - malignant	0	0	6	27	1	3	0	0	0	0	7	5
Burn	0	0	1	5	2	5	0	0	0	0	3	2
Scald	0	0	0	0	1	3	0	0	0	0	1	1
Sports injury	0	0	1	5	0	0	1	3	0	0	2	1
Failed primary surgery	1	6	2	9	1	3	2	5	0	0	6	4
Ophthalmological disease	0	0	0	0	16	42	7	19	4	19	27	20
Others	5	28	3	14	6	16	20	54	11	52	45	33
Missing	0	0	2	9	0	0	0	0	1	5	3	2
Total	18	100	22	100	38	100	37	100	21	100	136	100

**1 transplantation performed in 2004 and 2007 had 2 diagnoses*

**3 transplantations performed in 2006 had 2 diagnoses*

7.4 Pre-Transplant Data

This section presents data on the tissue provider (Table 7.4.1), origin of tissue graft (Table 7.4.2), tissue graft type (Table 7.4.3), type of sterilisation of the graft (Table 7.4.4), mode of transport storage of tissue graft to recipient hospital (Table 7.4.5) and temperature of storage tissue graft during transportation (Table 7.4.6).

Table 7.4.1 Distribution of Number of Transplantation according to Tissue Provider, 2004-2008

Name of Tissue Bank	2004		2005		2006		2007		2008		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
USM Tissue Bank	13	76	18	82	31	89	34	94	21	100	117	89
Bone Bank, UMMC	1	6	0	0	0	0	0	0	0	0	1	1
Bone Bank, Hospital Kuala Lumpur	3	18	0	0	0	0	0	0	0	0	3	2
Eucara Pharmaceutical (P) Ltd., India	0	0	0	0	2	6	0	0	0	0	2	2
Osteo Tech Inc., USA	0	0	1	5	0	0	0	0	0	0	1	1
Missing	0	0	3	14	2	6	2	6	0	0	7	5
Total	17	100	22	100	35	100	36	100	21	100	131	100

Table 7.4.2 Distribution of Number of Transplantation by Origin of Tissue Graft, 2004-2008

Origin of Tissue Graft	2004		2005		2006		2007		2008		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Local	17	100	15	68	31	89	34	94	20	95	117	89
Imported	0	0	3	14	2	6	0	0	0	0	5	4
Missing	0	0	4	18	2	6	2	6	1	5	9	7
Total	17	100	22	100	35	100	36	100	21	100	131	100

Table 7.4.3 Distribution of Number of Transplantation by Tissue Graft Types, 2004-2008

Tissue graft types	2004		2005		2006		2007		2008		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Deep frozen tissues	9	53	14	64	5	14	5	14	2	10	35	27
Freeze dried (Lyophilised)	6	35	4	18	29	83	31	86	16	76	86	66
Not Available	2	12	2	9	0	0	0	0	0	0	4	3
Missing	0	0	2	9	1	3	0	0	3	14	6	5
Total	17	100	22	100	35	100	36	100	21	100	131	100

Table 7.4.3(a) Distribution of Tissue Graft Types (breakdowns), 2004-2008

Tissue graft types (breakdowns)	2004		2005		2006		2007		2008		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Femur	3	11	3	7	0	0	0	0	1	5	7	4
Femoral head	2	7	12	26	2	4	7	18	2	9	25	14
Humerus	0	0	1	2	3	7	0	0	0	0	4	2
Tibia	1	4	1	2	1	2	0	0	0	0	3	2
Radius	2	7	5	11	0	0	0	0	0	0	7	4
Patella	1	4	1	2	2	4	0	0	0	0	4	2
Other tendon fascia cartilage	0	0	0	0	0	0	1	3	0	0	1	1
Amniotic membranes	2	7	3	7	25	56	31	79	19	86	80	45
Cancellous	15	56	19	41	2	4	0	0	0	0	36	20
Cortical	0	0	0	0	6	13	0	0	0	0	6	3
Cortical cancellous	1	4	1	2	0	0	0	0	0	0	2	1
Bone granule	0	0	0	0	1	2	0	0	0	0	1	1
Bone powder	0	0	0	0	3	7	0	0	0	0	3	2
Total	27	100	46	100	45	100	39	100	22	100	179	100

Table 7.4.4 Distribution of Graft Sterilization Types, 2004-2008

Graft sterilization types	2004		2005		2006		2007		2008		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Gamma irradiation	16	94	15	68	30	86	27	75	19	90	107	82
Glycerol	0	0	0	0	2	6	0	0	0	0	2	2
Sterile freeze dried human bone	0	0	1	5	0	0	0	0	0	0	1	1
Missing	1	6	6	27	3	9	9	25	2	10	21	16
Total	17	100	22	100	35	100	36	100	21	100	131	100

Table 7.4.5 Distribution of Mode of Transport Storage to Recipient Hospital during
Transportation, 2004-2008

Mode of transport storage to recipient hospital	2004		2005		2006		2007		2008		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
By flight	1	6	1	5	2	6	2	6	1	5	7	5
By courier	2	12	3	14	24	69	23	64	17	81	69	53
By hand	4	24	8	36	1	3	0	0	0	0	13	10
Dry ice box	5	29	4	18	0	0	0	0	0	0	9	7
Sterile package	0	0	0	0	2	6	0	0	0	0	2	2
Missing	5	29	6	27	6	17	11	31	3	14	31	24
Total	17	100	22	100	35	100	36	100	21	100	131	100

Table 7.4.6 Distribution of Temperature of Storage during Transportation, 2004-2008

Temperature of storage during transportation (°C)	2004		2005		2006		2007		2008		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
-80	2	12	0	0	0	0	0	0	0	0	2	2
-40	0	0	1	5	0	0	0	0	0	0	1	1
-20	4	24	4	18	0	0	1	3	0	0	9	7
-10	0	0	6	27	2	6	1	3	1	5	10	8
0	2	12	0	0	0	0	0	0	0	0	2	2
37	0	0	0	0	2	6	0	0	0	0	2	2
Room temperature	3	18	4	18	25	71	22	61	17	81	71	54
Missing	6	35	7	32	6	17	12	33	3	14	34	26
Total	17	100	22	100	35	100	36	100	21	100	131	100

7.5 Transplant Surgery Data

The data on mode of storage of tissues in recipient hospitals are presented in Table 7.5.1. This section also presents the data on the use of composite graft (Tables 7.5.2 and 7.5.3), presence of pre operative infection at implant site (Table 7.5.4), presence of infection of pre implanted grafts (Tables 7.5.5 and 7.5.6) and the usage of antibiotics (Tables 7.5.7, 7.5.8, 7.5.9, and 7.5.10)

Table 7.5.1 Distribution of Mode of Storage in Recipient Hospital, 2004-2008

Mode of storage in recipient hospital	2004		2005		2006		2007		2008		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Refrigerator	0	0	1	5	25	71	28	78	12	57	66	50
Deep Freezer -20 °C	0	0	3	14	2	6	3	8	0	0	8	6
Deep Freezer -40 °C	1	6	2	9	0	0	0	0	1	5	4	3
Deep Freezer -80 °C	3	18	4	18	1	3	1	3	0	0	9	7
Liquid Nitrogen	0	0	0	0	0	0	0	0	0	0	0	0
Glycerol	0	0	1	5	3	9	4	11	6	29	14	11
Room Temperature	0	0	1	5	1	3	0	0	2	10	4	3
Others	12	71	5	23	2	6	0	0	0	0	19	15
Not Available	1	6	0	0	0	0	0	0	0	0	1	1
Missing	0	0	5	23	1	3	0	0	0	0	6	5
Total	17	100	22	100	35	100	36	100	21	100	131	100

Table 7.5.2 Distribution of Additional Tissue Usage (Composite Graft), 2004-2008

Additional Tissue Used	2004		2005		2006		2007		2008		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Yes	9	53	7	32	1	3	2	6	1	5	20	15
• Autografts	7	41	3	14	0	0	0	0	1	5	11	8
• Allografts	1	6	2	9	1	3	2	6	0	0	6	5
• Others	1	6	1	5	0	0	0	0	0	0	2	2
• Missing	0	0	1	5	0	0	0	0	0	0	1	1
No	6	35	12	55	32	91	33	92	19	90	102	78
Not Available	2	12	1	5	0	0	0	0	0	0	3	2
Missing	0	0	2	9	2	6	1	3	1	5	6	5
Total	17	100	22	100	35	100	36	100	21	100	131	100

Table 7.5.3 Distribution of Presence of Pre Operative Infection at Implant Site, 2004-2008

Presence of pre operative infection at implant site	2004		2005		2006		2007		2008		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Yes	0	0	0	0	4	11	9	25	3	14	16	12
No	15	88	21	95	31	89	27	75	18	86	112	85
Not Available	2	12	0	0	0	0	0	0	0	0	2	2
Missing	0	0	1	5	0	0	0	0	0	0	1	1
Total	17	100	22	100	35	100	36	100	21	100	131	100

Table 7.5.4 Distribution of Pre Implant Graft Cultural Swab, 2004-2008

Pre implant graft cultural swab	2004		2005		2006		2007		2008		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Yes	0	0	1	5	0	0	1	3	0	0	2	2
• Cytomegalovirus	0	0	1	5	0	0	0	0	0	0	1	1
• Proteus	0	0	0	0	0	0	1	3	0	0	1	1
No	15	88	16	73	17	49	22	61	18	86	88	67
Not Available	2	12	0	0	6	17	5	14	0	0	13	10
Missing	0	0	5	23	12	34	8	22	3	14	28	21
Total	17	100	22	100	35	100	36	100	21	100	131	100

Table 7.5.5 Distribution of Grafts Soaked in Antibiotics Prior to Transplantation, 2004-2008

Grafts soaked in antibiotics prior to transplantation	2004		2005		2006		2007		2008		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Yes	7	41	16	73	6	17	6	17	1	5	36	27
• Ceftriazone	4	24	9	41	3	9	0	0	0	0	16	12
• Gentamicin	3	18	4	18	3	9	4	11	1	5	15	11
• Povidone iodine, Ceftriazone	0	0	1	5	0	0	0	0	0	0	1	1
• Ceftriazone and Gentamicin	0	0	0	0	0	0	1	3	0	0	1	1
• Vancomycin, Postome iodine	0	0	1	5	0	0	0	0	0	0	1	1
• Missing	0	0	1	5	0	0	1	3	0	0	2	2
No	8	47	5	23	28	80	28	78	20	95	89	68
Not Available	2	12	0	0	1	3	0	0	0	0	3	2
Missing	0	0	1	5	0	0	2	6	0	0	3	2
Total	17	100	22	100	35	100	36	100	21	100	131	100

Table 7.5.6 Distribution of Number of Transplant by Systemic Antibiotics Given Prior to Transplantation, 2004-2008

Systemic antibiotics given prior to transplantation	2004		2005		2006		2007		2008		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Yes	12	71	17	77	9	26	10	28	3	14	51	39
• Cefeperazone	2	12	2	9	0	0	0	0	0	0	4	3
• Ceftriazone/ Imipenam	2	12	2	9	3	9	3	8	0	0	10	8
• Cefuroxime	7	41	7	32	4	11	2	6	1	5	21	16
• Ciproflaxacin	0	0	2	9	0	0	2	6	1	5	5	4
• Chloramphenicol	0	0	0	0	1	3	0	0	0	0	1	1
• Gentamicin	0	0	0	0	0	0	0	0	1	5	1	1
• Metronidazole	1	6	1	5	0	0	0	0	0	0	2	2
• Ceftazidime	0	0	0	0	1	3	0	0	0	0	1	1
• T. Augmentin	0	0	0	0	0	0	1	3	0	0	1	1
• T.Flurariazole	0	0	0	0	0	0	2	6	0	0	2	2
• Ampicillin / Sulbactam	0	0	2	9	0	0	0	0	0	0	2	2
• Missing	0	0	1	5	0	0	0	0	0	0	1	1
No	4	24	3	14	26	74	26	72	17	81	76	58
Not Available	1	6	0	0	0	0	0	0	0	0	1	1
Missing	0	0	2	9	0	0	0	0	1	5	3	2
Total	17	100	22	100	35	100	36	100	21	100	131	100