A SURVEY OF PACEMAKER IMPLANTATION IN JAPAN – 1984:

Report from the Pacemaker Committee of Japan Circulation Society and Japan Society of Medical Electronics and Biological Engineering

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The Survey

A survey of pacemaker implants in Japan was done from January 1 through December 31, 1984, and the material covered was similar in content to the previous survey performed in 1984 for the implant practices in 1983. Returns were received from 625 medical facilities out of 953 contacted by means of reply postcards. 308 potential facilities were added to 645 implanting facilities surveyed in the previous work.

The number of implanted pacemakers was classified as new implants and replacements. In this survey, the number of DDD implantations was also added.

Results

1. Replies and collection rate (Table 1)

The questionnaires were sent to 953 facilities, and 625 replies were received. The collection rate was 65.6%.

The whole nation was divided into the follow-

ing 10 blocks. (All names inside parentheses are the prefecture names.)

- 1) Hokkaido
- 2) Tohoku (Aomori, Iwate, Akita, Yamagata, Miyagi and Fukushima)
- 3) Kanto (Tokyo, Kanagawa, Chiba, Saitama, Ibaraki, Gunma and Tochigi)
- 4) Tokai (Aichi, Shizuoka, Mie and Gifu)

Table 2. Facilities, pacemakers implanted.

	1984	1983	Difference
Hokkaido	46	26	+20
Tohoku	52	51	+1
Kanto	138	99	+39
Tokai	56	45	+11
Koshinetsu	33	18	+15
Hokuriku	10	14	-4
Kinki	70	65	+5
Chugoku	33	29	+4
Shikoku	29	25	+4
Kyushu	51	39	+12
Total	518	411	+107

Table 1. Background statistics.

	Survey Number	Replies received	Collection Rate (%)
Hokkaido	79	56	70.9
Tohoku	120	67	55.8
Kanto	324	181	55.9
Tokai	81	63	77.8
Koshinetsu	58	44	75.9
Hokuriku	19	13	68.4
Kinki	102	72	70.6
Chugoku	46	37	80.4
Shikoku	48	34	70.8
Kyushu	76	58	76.3
Total	953	625	65.6

Table 3. Annual implants.

	1984	1983	Difference
Hokkaido	617	330	+287
Tohoku	631	725	-94
Kanto	1876	1552	+324
Tokai	528	558	-30
Koshinetsu	358	268	+90
Hokuriku	219	207	+12
Kinki	1099	1049	+50
Chugoku	588	411	+177
Shikoku	258	213	+45
Kyushu	825	725	+100
Total	6999	6038	+961

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Table 4. DDD implants.

	1984
Hokkaido	53
Tohoku	83
Kanto	439
Tokai	123
Koshinetsu	95
Hokuriku	29
Kinki	284
Chugoku	144
Shikoku	17
Kyushu	120
Total	1380

Table 5. Percentages of DDD.

	1984
Hokkaido	8.6
Tohoku	13.2
Kanto	23.4
Tokai	23.3
Koshinetsu	26.5
Hokuriku	13.2
Kinki	25.8
Chugoku	24.5
Shikoku	6.6
Kyushu	14.5
Total	19.8

Table 6. Annual implants per facility.

	1984	1983	Difference
Hokkaido	13.4	12.7	+0.7
Tohoku	12.1	14.2	-2.1
Kanto	13.6	15.7	-2.1
Tokai	9.4	12.4	-3.0
Koshinetsu	10.8	14.9	-4.1
Hokuriku	21.9	14.8	+7.1
Kinki	15.7	16.1	-0.4
Chugoku	17.8	14.2	+3.6
Shikoku	8.9	8.5	+0.4
Kyushu	16.2	18.6	-2.4
Total	13.5	14.7	-1.2

- 5) Koshinetsu (Yamanashi, Nagano and Niigata)
- 6) Hokuriku (Toyama, Ishikawa and Fukui)
- 7) Kinki (Osaka, Kyoto, Nara, Shiga, Wakayama and Hyogo)
- 8) Chugoku (Okayama, Hiroshima, Tottori, Shimane and Yamaguchi)
- 9) Shikoku (Kagawa, Ehime, Tokushima and Kochi)
- 10) Kyushu (Fukuoka, Saga, Oita, Nagasaki, Kumamoto, Miyazaki, Kagoshima and Okinawa)

2. Number of facilities (Table 2)

Table 7. Percentages of new implants.

	1984	1983	Difference
Hokkaido	71.2	72.7	-1.5
Tohoku	80.2	76.4	+3.8
Kanto	74.0	73.6	+0.4
Tokai	72.7	75.0	-2.3
Koshinetsu	77.7	74.6	+3.1
Hokuriku	77.6	70.5	+7.1
Kinki	71.7	80.2	-8.5
Chugoku	73.0	73.2	-0.2
Shikoku	81.0	78.1	+2.9
Kyushu	79.2	77.5	+1.7
Total	74.9	75.4	-0.5

Table 8. Implants per one million people.

	1984	1983	Difference
Hokkaido	109	59	+50
Tohoku	65	75	-10
Kanto	52	44	+8
Tokai	39	41	-2
Koshinetsu	66	50	+16
Hokuriku	71	69	+2
Kinki	56	54	+2
Chugoku	76	54	+22
Shikoku	61	52	+9
Kyushu	58	52	+6
Total	59	53	+6

Table 9. Implants per one million people (International).

	Total	New Implants	Replacements	Absolute Number of Implants
JAPAN	59	44	15	6999
UNITED STATES	621	518	103	141100
UNITED KINGDOM	149	115	34	8320
CANADA	285	224	61	6818
WEST GERMANY	695	519	176	42300
FRANCE	485	346	112	24500
ITALY	250	167	83	14202
SPAIN	117	95	22	4375

There were 625 facilities which replied to the questionnaire, and out of that, 518 pacemaker implantations were performed.

The number of 518 shows a 26.0% increase from the 411 implanting facilities in the previous year (1983).

3. Number of implants during the year (Table 3)

The total number of pacemakers implanted in 1984 was 6,999.

The number shows an increase of 961 pacemaker units compared to 6,038 units in the

previous year, an increase of 15.9%.

4. *Number of DDD implants* (Table 4)

The total number of DDD pacemakers implanted in 1984 was 1,387 units.

5. *Ratio of DDD implants* (Table 5)

The ratio of DDD implants in 1984 was 19.8%.

6. *Number of implants per facility* (Table 6)

The number of implants per facility decreased to 13.5 units from 14.7 in the previous year.

7. *Ratio of new implants* (Table 7)

The total annual implants of 6,999 units in 1984 were classified as 5,244 new implants and 1,755 replacements, and the ratio was 74.9% and 25.1%, respectively.

The ratio of new implants in 1984 decreased by 0.5% compared to the ratio in the previous year.

8. *Number of implants per one million people* (Table 8)

The average number of pacemaker implants per one million people in Japan was 59, showing an increase of 6 implants compared to 53 in

1983.

The population was based on the "Basic Population Register" provided by the Ministry of Home Affairs on March 31, 1984.

9. *Comparison of the numbers of implants per one million people between Japan and Western Nations including U.S.A.* (Table 9)

The numbers except Japan were collected from data in the World Survey conducted from January through December 1981 for the VIIth World Symposium on Cardiac Pacing held in Vienna in 1983.

The pacemaker Committee appreciates the cooperative replies to the questionnaires from all the cardiologists and surgeons who have been in charge of cardiac pacing all over Japan and kindly responded.

REFERENCES

1. YOKOYAMA H, HORI M: A survey of pacemaker implantation in Japan - 1983. *Jpn Circ J* **49**: 1052, 1985