Approximate distance
5620 miles or
9042.58 Kilometers
Contents of Presentation

1) Fundamentals of health and welfare in Japan
2) ESRD (CKD 5) in Japan and the world
3) PPT in Japan and the world
4) CKD (1-4) in Japan and the world
Elderly people is rapidly increasing in Japan.
Average height females by country

Average height of males by country

Turkey 172.6 cm  Japan 171.6 cm

Prevalence of obesity Among adults, 2009

Turkey 161.4 kg  Japan 158.5 kg
Trends in life expectancy at birth, 1908-2008

Data from University of California at Berkeley and Max Planck Institute for Demographic Research and Ministry of Health, Labour and Welfare

Nayu Ikeda,
Lancet 2011; 378: 1094-105
Japanese universal health coverage was established in 1961.
Health expenditure per capita

Health expenditure per capita, public and private expenditure, OECD countries, 2010

US$ PPP per capita

Japan
High blood pressure, a major risk factor globally

Almost 1 billion people worldwide have high blood pressure, a recent report found.

United States: 31.8%

Japan

Rate of hypertension, ages 20 years and older (percent), 2000

No data 14 - 21 22 - 28 29 - 36 37 +

M F

Japan
Salt intake of turkey and the world

Prof. Mustafa ARICI, MD

Turkey (n=1768) - 306.67
Japan (n=1145) - 198.3
China (n=839) - 227.5
England (n=501) - 145.2
America (n=2195) - 162.6

Blood Pressure 19(5):313-8, October 2010
Prevalence of unadjusted ESRD in the world

Prevalent rate per million population

Taiwan
Japanese
US

Countries:
- Canada
- Hong Kong
- Uruguay
- Sweden
- Rep. of Korea
- Australia
- Isreal
- Argentina
- Czech Republic
- Turkey

Graph showing the prevalence rate of ESRD from 2001 to 2009 for various countries.
Prevalence of ESRD

Incidence of ESRD 2010

<table>
<thead>
<tr>
<th>Country</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan</td>
<td>271</td>
<td>275</td>
<td>285</td>
<td>288</td>
<td>287</td>
<td>288</td>
</tr>
<tr>
<td>Turkey</td>
<td>179</td>
<td>192</td>
<td>229</td>
<td>261</td>
<td>257</td>
<td>252</td>
</tr>
</tbody>
</table>
Prevalence and Incidence of patients Undergoing hemodialysis In Japan

>300,000
Incidence by gender: ESRD

- Men
- Women
- Difference

Year

Incidence, per million population

- '83 '84 '85 '86 '87 '88 '89 '90 '91 '92 '93 '94 '95 '96 '97 '98 '99 '00 '01 '02 '03 '04 '05 '06 '07 '08 '09 '10
Causes of ESRD in the world

JAPAN  Taiwan  USA  Germany  Australia

- nephrosclerosis/ hypertension
- diabetes
- glomerulonephritis
- others

DOI 10.1007/s10157-007-0010-9
Annual changes in prevalence and incidence of patients undergoing hemodialysis in Japan.

Prevalence:
- Others
- Unknown
- Nephrosclerosis
- Glomerulonephritis
- DM

Incidence:
- Average Age (2010)
  - CGN 67.5
  - DM 66.1
  - HT 74.1

Types:
- Glomerulonephritis
- DM
- Nephrosclerosis
Evolving Face of Primary Diagnosis of ESRD in Hemodialysis Patients in Turkey

Gültekin Süleymanlar, MD
Akdeniz University Medical School, Antalya
Effect of age in survival of patients on dialysis ~ international comparison ~

Cause of death in patients with ESRD on chronic dialysis in Japan

Percentage, %

Cardiac
Infection
Malignancies
Stroke
Acute myocardial infarction

'83 '84 '85 '86 '87 '88 '89 '90 '91 '92 '93 '94 '95 '96 '97 '98 '99 '00 '01 '02 '03 '04 '05 '06 '07 '08 '09 '10
The remaining years of patients on hemodialysis

- Female in general: 55.97
- Male in general: 46.22
- Female on HD: 30.35
- Male on HD: 27.36

Age vs. Remaining Years
Proportion of PD of patients on HD/PD
USRDS 2009
PPT in Japan & Turkey

Transplantation

PD (3%)

4%

PD

HD (93%)

Turkey

12.9%

10.1

HD (77%)

JAPAN

Turkey

Graph showing the percentage of patients on PD, HD, and transplantation in Japan and Turkey.
Cost of hemodialysis in Japan and Turkey

Hemodialysis costs &60,000 in each individuals for year. In total, > 18 bilion dollars have been used for ESRD every year costs. It means 0.2 % of total population uses 5 % of total health budget in Japan!!

Percentage of total health budget

<table>
<thead>
<tr>
<th>Country</th>
<th>Percentage of total health budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>6 %</td>
</tr>
<tr>
<td>JAPAN</td>
<td>5 %</td>
</tr>
<tr>
<td>TAIWAN</td>
<td>8 %</td>
</tr>
<tr>
<td>TURKEY</td>
<td>8 %</td>
</tr>
</tbody>
</table>

TR

- HD: $22,759
- PD: $22,350
- Tx: 1. year: $23,393, 2. year: $10,028

Total Cost of RRT in 2006: $1,218,650,000

Total Cost of RRT in 2016: ~ $2.5 billion
### Classification by eGFR and albuminuria (KDIGO 2009)

#### Albuminuria stages, description, and range (mg/g)

<table>
<thead>
<tr>
<th>Albuminuria stages, description, and range (mg/g)</th>
<th>A1</th>
<th>A2</th>
<th>A3</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optimum</td>
<td>&lt;10</td>
<td>10-29</td>
<td>30-299</td>
<td>&gt;300</td>
</tr>
<tr>
<td>High-normal</td>
<td>23.6%</td>
<td>5.7%</td>
<td>1.9%</td>
<td>0.1%</td>
</tr>
<tr>
<td>High</td>
<td>20.0%</td>
<td>4.7%</td>
<td>1.7%</td>
<td>0.3%</td>
</tr>
<tr>
<td>Very high</td>
<td>8.2%</td>
<td>2.7%</td>
<td>1.3%</td>
<td>0.1%</td>
</tr>
</tbody>
</table>

#### GFR stages and range (mL/min per 1.73m²)

<table>
<thead>
<tr>
<th>GFR stages, description, and range (mL/min per 1.73m²)</th>
<th>G1</th>
<th>G2</th>
<th>G3a</th>
<th>G3b</th>
<th>G4</th>
<th>G5</th>
</tr>
</thead>
<tbody>
<tr>
<td>High and optimum</td>
<td>&gt;105</td>
<td>75-89</td>
<td>45-59</td>
<td>30-44</td>
<td>15-29</td>
<td>&lt;15</td>
</tr>
<tr>
<td>G1 High and optimum</td>
<td>23.6%</td>
<td>17.3%</td>
<td>2.5%</td>
<td>0.6%</td>
<td>0.1%</td>
<td>0.0%</td>
</tr>
<tr>
<td>G1 Optimum</td>
<td>5.7%</td>
<td>4.1%</td>
<td>1.1%</td>
<td>0.4%</td>
<td>0.1%</td>
<td>0.0%</td>
</tr>
<tr>
<td>G1 High</td>
<td>1.9%</td>
<td>1.6%</td>
<td>0.8%</td>
<td>0.4%</td>
<td>0.1%</td>
<td>0.0%</td>
</tr>
<tr>
<td>G1 Very high</td>
<td>0.1%</td>
<td>0.2%</td>
<td>0.2%</td>
<td>0.2%</td>
<td>0.1%</td>
<td>0.1%</td>
</tr>
</tbody>
</table>

#### All stages

<table>
<thead>
<tr>
<th>G1</th>
<th>G2</th>
<th>G3a</th>
<th>G3b</th>
<th>G4</th>
<th>G5</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>72.2%</td>
<td>18.8%</td>
<td>7.8%</td>
<td>1.3%</td>
<td>100.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disease</td>
<td>Count</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hypertension</td>
<td>3,500</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DM</td>
<td>740</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-DM</td>
<td>880</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dyslipidemia</td>
<td>600</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obesity</td>
<td>1,100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hyperuricemia</td>
<td>500</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gout</td>
<td>30〜50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CKD</strong></td>
<td><strong>1,330</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1/8 of total population >20 YO

X10,000
eGFR from 1554 participants
The average of eGFR is 80.2 with ± 15.2 mL/min/1.73 m².

From CREST study in Turkey
Population of CKD in Japan and Turkey

- **Turkey**: 7,307,315
- **Japan**: 13,300,000

<table>
<thead>
<tr>
<th>Stage</th>
<th>Turkey</th>
<th>Japan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>15.5</td>
<td>13.3</td>
</tr>
<tr>
<td>Stage 1</td>
<td>16</td>
<td>14</td>
</tr>
<tr>
<td>Stage 2</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td>Stage 3</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>Stage 4</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Stage 5</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Stage 6</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Stage 7</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Stage 8</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Stage 9</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Age-difference of CKD stage

In Japan

Male \( (N=240,594) \)

Female \( (N=333,430) \)

GFR (mL/min/1.73m²)

- 50~59
- 40~49
- <40

In Turkey

Rates of CKD by Age Groups

Credit

From Gültekin Süleymanlar
Results of urinalysis for proteinuria and hematuria in relation to the cumulative incidence rate of RRSD

Prevalence of hypertension in CKD patients
Japan and Turkey

Japan

Prevalence of hypertension in CKD(+) patients

Turkey


Prevalence of hypertension in CKD(+) patients

Optimal
>120/80

120-129
/80-84

130-139
/85-89

140-159
/90-99

160-179
/100-109

>180/110

CKD(+) CKD(-)
What is a high risk group for CKD?

CVD deaths are related with proteinuria and low eGFR

Men

Women

*P<0.05

Hisayama Study
Average local town in Kyushu district

Legend
Top
Middle
Bottom
No data

Hisayama

N=2,634, 1988-2000, not-adjusted
N=2,634, 1988-2000, adjusted

CKD (+) = GFR < 60 ml/min/1.73m²
†age, sex, hypertension, ECG, DM, BMI, TC, TG, HDL-C, homocysteine, hs-CRP, smoking, alcohol
Osaka Study

Chronic Kidney Disease (CKD) in Japanese Subjects without Notable Chronic Diseases Undergoing an Annual Health Checkup

A total of 63,704 residents ≥40 years

M: 11,636
F: 27,575

39,211

Under any treatment: 12,622
Missing data: 992

n= 39,211

58.6 ± 8.6 years
Summary of presentation
Comparison of Japan and Turkey

Simmilarities

1) The prevalence of CKD/ERSD is growing.
2) The percentage of diabetes and hypertension increases as a cause of ESRD in both counties.
3) Aging affect the incidence and prognosis CKD/ERSD

Dissimmilarities

1) Age, average GFR, CKD stage are different
2) M>F in Japan, F>M in Turkey
3) Percentage of Transplantation as RRT is lower in Japan.
Both countries have been suffered from great earthquakes

2011.3.11
East Japan Earthquake and Tsunami

2011.10.23
Eastern Turkey Earthquakes
Magnitude 7.2
We Japanese appreciate from the heart the help of all the people in Republic of Turkey.