Burden of AF and stroke in Korea

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Nothing to Disclosure

The authors have no financial conflicts of interest to disclose concerning the presentation.
Outlines

• AF disease burden: Incidence & prevalence of AF in Korea

• AF hospitalization burden, Medical cost, hospital use.

• Clinical outcomes including stroke in AF patients of Korea.
Incidence of AF in Korea

From NHIS AF cohort data (entire population of Korea)
Number of AF population in cohort: about 1,000,000

Incidence: 1.8 per 1000 PYs / not increase

≥70 years old: annual incidence 1%

D Kim, PS Yang, BJ Joung, GYH Lip. American Heart Journal, 2018
Prevalence of AF in Korea

Prevalence: 1.2% in 2011, 1.4% in 2013, 1.5% in 2015

D Kim, PS Yang, B Joung, GYH Lip. American Heart Journal, 2018
The projected prevalence and number of AF

- Prevalence: 5.8% in 2060
- Number of AF: 2.3 million in 2060

*D Kim, PS Yang, BJoung, GYH Lip. American Heart Journal, 2018*
CHAD2-VASc score of AF patients in Korea

Distribution of CHAD2-VASc scores in the patients with atrial fibrillation

Increase comorbidity

D Kim, PS Yang, B Joung, GYH Lip. American Heart Journal, 2018
# Temporal trends of AF hospitalization

## Trends of AF hospitalization per 1 million Korean population between 2006 ~ 2015

<table>
<thead>
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</thead>
<tbody>
<tr>
<td>Overall</td>
<td>767</td>
<td>997</td>
<td>1,275</td>
<td>1,529</td>
<td>1,854</td>
<td>2,048</td>
<td>2,497</td>
<td>2,914</td>
<td>3,397</td>
<td>3,986</td>
<td>420</td>
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<tr>
<td>Age</td>
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<tr>
<td>20-49 years</td>
<td>58</td>
<td>71</td>
<td>85</td>
<td>92</td>
<td>111</td>
<td>117</td>
<td>124</td>
<td>121</td>
<td>131</td>
<td>145</td>
<td>150</td>
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<tr>
<td>50-59 years</td>
<td>497</td>
<td>572</td>
<td>656</td>
<td>748</td>
<td>855</td>
<td>1,013</td>
<td>1,108</td>
<td>1,162</td>
<td>1,303</td>
<td>1,303</td>
<td>162</td>
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<tr>
<td>60-69 years</td>
<td>2,013</td>
<td>2,370</td>
<td>2,689</td>
<td>3,058</td>
<td>3,483</td>
<td>3,666</td>
<td>4,136</td>
<td>4,342</td>
<td>4,449</td>
<td>4,856</td>
<td>141</td>
<td>&lt;0.001</td>
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<tr>
<td>70-79 years</td>
<td>5,249</td>
<td>6,777</td>
<td>8,504</td>
<td>9,488</td>
<td>11,120</td>
<td>11,631</td>
<td>13,227</td>
<td>15,148</td>
<td>17,246</td>
<td>19,242</td>
<td>267</td>
<td>&lt;0.001</td>
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<tr>
<td>≥ 80 years</td>
<td>8,185</td>
<td>10,805</td>
<td>14,459</td>
<td>17,890</td>
<td>21,402</td>
<td>24,034</td>
<td>29,887</td>
<td>35,174</td>
<td>41,429</td>
<td>48,388</td>
<td>491</td>
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<tr>
<td>Sex</td>
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<tr>
<td>Male</td>
<td>827</td>
<td>1,039</td>
<td>1,302</td>
<td>1,561</td>
<td>1,853</td>
<td>2,037</td>
<td>2,457</td>
<td>2,817</td>
<td>3,204</td>
<td>3,727</td>
<td>350</td>
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<tr>
<td>Female</td>
<td>707</td>
<td>956</td>
<td>1,249</td>
<td>1,497</td>
<td>1,856</td>
<td>2,059</td>
<td>2,535</td>
<td>3,009</td>
<td>3,588</td>
<td>4,242</td>
<td>500</td>
<td>&lt;0.001</td>
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</table>

* D Kim, PS Yang, B Joung, GYH Lip. Heart, 2018
## Trends of AF treatment patterns

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<tbody>
<tr>
<td>Oral anticoagulants (%)</td>
<td>26.8</td>
<td>27.5</td>
<td>27.2</td>
<td>27.9</td>
<td>28.0</td>
<td>29.5</td>
<td>30.3</td>
<td>32.0</td>
<td>33.6</td>
<td>36.4</td>
<td>+36</td>
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<tr>
<td>Aspirin (%)</td>
<td>46.2</td>
<td>47.0</td>
<td>47.1</td>
<td>47.6</td>
<td>47.1</td>
<td>45.9</td>
<td>45.5</td>
<td>44.2</td>
<td>41.7</td>
<td>37.4</td>
<td>-19</td>
<td>&lt;0.001</td>
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<tr>
<td>P2Y12 inhibitor (%)</td>
<td>5.9</td>
<td>7.6</td>
<td>9.4</td>
<td>11.2</td>
<td>11.1</td>
<td>11.0</td>
<td>11.9</td>
<td>13.4</td>
<td>15.2</td>
<td>15.7</td>
<td>+165</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Statin (%)</td>
<td>16.0</td>
<td>19.3</td>
<td>21.4</td>
<td>24.9</td>
<td>28.2</td>
<td>30.3</td>
<td>33.2</td>
<td>36.0</td>
<td>38.9</td>
<td>41.5</td>
<td>+160</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Rate control (%)</td>
<td>61.1</td>
<td>61.6</td>
<td>61.2</td>
<td>62.0</td>
<td>61.3</td>
<td>60.9</td>
<td>58.7</td>
<td>56.9</td>
<td>54.5</td>
<td>52.0</td>
<td>-15</td>
<td>&lt;0.001</td>
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<tr>
<td>β-blocker (%)</td>
<td>44.7</td>
<td>46.0</td>
<td>46.6</td>
<td>47.9</td>
<td>47.7</td>
<td>47.8</td>
<td>45.8</td>
<td>44.2</td>
<td>42.1</td>
<td>40.1</td>
<td>-10</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>CCB (%)</td>
<td>20.8</td>
<td>21.3</td>
<td>21.8</td>
<td>22.5</td>
<td>22.5</td>
<td>21.9</td>
<td>21.5</td>
<td>21.1</td>
<td>20.6</td>
<td></td>
<td>-1.1</td>
<td>&lt;0.001</td>
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<tr>
<td>Digoxin (%)</td>
<td>32.7</td>
<td>30.5</td>
<td>28.3</td>
<td>26.7</td>
<td>24.8</td>
<td>23.6</td>
<td>21.8</td>
<td>20.2</td>
<td>18.5</td>
<td>16.7</td>
<td>-49</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>AAD (%)</td>
<td>11.7</td>
<td>12.1</td>
<td>12.3</td>
<td>12.5</td>
<td>12.8</td>
<td>14.0</td>
<td>14.7</td>
<td>15.2</td>
<td>15.9</td>
<td>16.5</td>
<td>+41</td>
<td>&lt;0.001</td>
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<tr>
<td>AAD Class Ic (%)</td>
<td>6.0</td>
<td>6.4</td>
<td>6.7</td>
<td>7.2</td>
<td>7.7</td>
<td>8.9</td>
<td>9.6</td>
<td>10.0</td>
<td>10.4</td>
<td>10.8</td>
<td>+80</td>
<td>&lt;0.001</td>
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<tr>
<td>AAD Class III (%)</td>
<td>5.9</td>
<td>5.9</td>
<td>5.8</td>
<td>5.5</td>
<td>5.4</td>
<td>5.4</td>
<td>5.5</td>
<td>5.8</td>
<td>6.0</td>
<td>0.5</td>
<td>0.5</td>
<td>0.287</td>
</tr>
<tr>
<td>AF RFCA (%)</td>
<td>0.14</td>
<td>0.14</td>
<td>0.10</td>
<td>0.16</td>
<td>0.20</td>
<td>0.23</td>
<td>0.26</td>
<td>0.25</td>
<td>0.26</td>
<td>0.29</td>
<td>+110</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Aspirin ↓, Rate control medication ↓
OAC ↑, P2Y12 inhibitor ↑, Statin ↑, Rhythm control medication ↑, RFCA ↑

* D Kim, PS Yang, B Joung, GYH Lip. Heart, 2018
Main cause of AF hospitalizations per 100 AF patients between 2006 and 2015

Ischemic stroke ↓, MI ↓
Major bleeding ↑, AF control↑, RFCA for AF↑, SSS or PM related ↑

D Kim, PS Yang, B Joung, GYH Lip. Heart, 2018
Temporal trends of medical cost for AF in Korea

**Total Medial Cost**

**AF Hospitalization Cost**

**Proportion of total AF hospitalization cost to Korean NHIS total expenditure**

D Kim, PS Yang, B Joung, GYH Lip. Heart, 2018
Executive Summary of Stroke Statistics in Korea 2018: A Report from the Epidemiology Research Council of the Korean Stroke Society

Stroke mortality

AF in acute stroke
1-year adverse event rates in overall AF, Korea

AF population

Age sex matched non-AF population

D Kim, PS Yang, B Joung, GYH Lip. American Heart Journal, 2018
Summary

- In Korea,
  - AF incidence: 1.8 per 1000 person-years
  - AF prevalence: 1.2% in 2011, 1.5% in 2015
  - The projected prevalence of AF: 5.8% in 2060
- AF hospitalization increased 4 times, from 2006 to 2015.
- Changes in AF treatment
  - Aspirin ↓, Rate control medication ↓
  - OAC ↑, P2Y12 inhibitor ↑, Statin ↑, Rhythm control medication ↑, RFCA ↑
- Changes in main cause of AF hospitalizations
  - Ischemic stroke ↓, MI ↓
  - Major bleeding ↑, AF control↑, RFCA for AF↑, SSS or PM related ↑
- Medical cost: rapidly increased, equivalent to 0.8% of the Korean NHIS total expenditure in 2015.
- Outcome associated with AF including stroke improved during the last decade.
• Thank you for your attention.