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What I talk about will be:

- In Japan, the late onset disability becomes the major type of active life loss in old ages.
- For further achieving healthy aging in Japan, it is important to focus on frailty, which precedes the late onset disability.
- A comprehensive system incorporating primary to tertiary prevention of frailty is needed for tackling this issue.
- Our ten-year community intervention showed that such system was effective for assisting healthy aging in community-living older adults.
Patterns of Functional Decline in Later Life

20-year prospective study on Japanese elderly (N=5717)

Akiyama H et al.『Kagaku』, Iwanami Publisher, 2010
Patterns of Functional Decline in Later Life

20-year prospective study on Japanese elderly (N=5717)

Females

Independent in IADL&ADL

IADL disability

early onset disability (12.1%)

ADL disability

late onset disability

Death

Age (years)

63-87

Akiyama H et al.『Kagaku』, Iwanami Publisher, 2010
What is frailty?

Frailty is an age-related syndrome of decreased reserve and resistance to stressors, resulting from cumulative declines across multiple physiologic systems and causing vulnerability to adverse outcomes (Fried et al, 2001).
A brief questionnaire for screening frailty - CL15

0 or 1 score for each item. 1 point is given to answer which indicates “having a risk” e.g., have difficulty, low ability, have no friend. Each point of the 15 items is summed up to produce a composite score with a range of 0-15.

(Shinkai S et al. Jpn J Public Health 2010; 57: 345-354)
## Predictive validity of CL15

### Table

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Crude RR</th>
<th>Adjusted RR*</th>
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</thead>
<tbody>
<tr>
<td><strong>ADL disability</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 years later</td>
<td>7.58 (4.20-13.7)</td>
<td>4.82 (2.54-9.15)</td>
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<tr>
<td>4 years later</td>
<td>4.97 (2.77-8.95)</td>
<td>3.07 (1.59-5.94)</td>
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<tr>
<td><strong>LTCI service use</strong></td>
<td>6.15 (4.39-8.63)</td>
<td>3.37 (2.31-4.91)</td>
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<tr>
<td><strong>Death</strong></td>
<td>3.73 (2.70-5.16)</td>
<td>2.40 (1.67-3.43)</td>
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</tbody>
</table>

*Adjusted for age, sex, and comorbidity

(Shinkai S et al. Jpn J Public Health 2013;60:262-274)
Independent predictors for developing frailty

**Muscle**
- Mass (less), Strength (less) → Sarcopenia

**Nutrition**
- Hb (low), Alb (low) → Lower nutrition

**Vascular health**
- ABI (low), baPWV (high), History of HT (+) → Subclinical vascular disease

(Yoshida H et al. Jpn J Geriatr 2012; 49: 442-448)
Background and Purpose

To date there has been no study on community-based intervention for healthy aging.

We have conducted a 10-year community intervention focusing on delaying the onset of frailty in later life, and examined its impact upon healthy aging.
Geographical location of study site

Kusatsu Town, Gunma Prefecture

Population, 7,200
(≥65 y, 29.4%)
Main industry, hot spa & resort

Town view
1. A tight collaboration with public health sector at local government

Public health sector at local government
Senior clubs, NPO, Health volunteers, Other stake holders

→ formed a community forum to discuss how to tackle frailty issue in community
2. Primary prevention of frailty

Health promotion activities were focused on improvement of physical activity, nutrition and social participation of older residents.

Health education

Group activities
3. Secondary prevention of frailty
We introduced the comprehensive geriatric assessment to the routine health check-ups, through which high-risk persons were screened, and encouraged to participate in long-term care prevention class.

Vascular health (baPWV, ABI) measurement

Walking speed test
4. Tertiary prevention of frailty

Long-term care prevention classes

Strength exercise  Nutritional education  Learn your community

In memory of their participation,

Enjoy lunch!
10-year community-based intervention in Kusatsu

Process evaluation.

For outcome evaluation, we conducted biannual health monitoring surveys over the period, and analyzed the data which was recorded in the Long-Term Care Insurance System during 2001 through present.
Result

Process evaluation

- The municipal staffs shared the common goal with us and have performed routine works from the aspect of healthy aging.
Result

Process evaluation

- Although the participation rate to annual health check-ups has remained at 30-40%, over 80% of the target population participated at least once during the 10 years.

- The response rate to the biannual monitoring survey has been very high (over 90%) over the period.
Result

Process evaluation

- Many residents joined the surveys as interviewers, through which they recognized the issue of aged community.

- Even after the end of long-term care prevention class, many participants continued such group activities by themselves.
Summary of process evaluation

- The municipal staffs and we could share the strategy for frailty prevention.

- Older residents became accustomed to the concept of healthy aging and improved their self-care ability.
Outcome evaluation

- Impact of geriatric health check-ups on subsequent mortality and disability
- Impact of community intervention on functional health of older residents
- Impact of community intervention on Long-Term Care Insurance data
Component of geriatric health check-ups

Routine test items + CGA

ADL / IADL

Physical Performance

Comprehensive Geriatric Assessment (CGA)

Nutritional Function

Social Function

Psychological / Cognitive Function
A meeting to inform individuals of results from geriatric health check-ups
**Result**

**Outcome evaluation**

- Impact of geriatric health check-ups on

  **Participants vs. Non-Participants**

  - mortality $\downarrow$ (significant)
  - disability $\downarrow$ (marginally significant)
Outcome evaluation

- Impact of geriatric health check-ups on mortality and disability
- **Impact of community intervention on functional health of older adults**
- Impact of community intervention on Long-Term Care Insurance data
Changes in standardized score of physical, nutritional, psychological functions over time among participants to health check-ups

Changes in standardized score of physical, nutritional, psychological functions over time among participants to health check-ups

Changes in life space over time among all older residents

“Can you go outside of town by yourself using public transportation or car?”

<table>
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<tr>
<th>Year of survey</th>
<th>Proportion of ‘yes’ (%)</th>
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<td>2011</td>
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Outcome evaluation

- Impact of geriatric health check-ups on mortality and disability
- Impact of community intervention on functional health of older residents
- Impact of community intervention on Long-Term Care Insurance data
Changes in incidence rate of disability over time certified under the LTCI program among older adults

(Shinkai S et al. Jpn J Public Health 2013;60:596-605)
Changes in the proportions of service users over time under the LTCI program in older populations

≥ 75 years

<table>
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<th>Gunma prefecture</th>
<th>Kusatsu town</th>
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65-74 years

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(Shinkai S et al. Jpn J Public Health 2013;60:596-605)
Changes in active life expectancy at 70 years of age over time in Kusatsu

Active life expectancy (years)

(Females)


(Males)


(Shinkai S et al. Jpn J Public Health 2013;60:596-605)
Summary of outcome evaluation

- The 10-year community intervention in Kusatsu successfully improved the functional health of older adults.
- Annual incidence rate of disability certified under the LTCI program significantly decreased over time in old-old population.
- Active life expectancy at the age of 70 was extended greatly, especially in women.
Implication of this intervention

- Public health approach is effective for preventing frailty in a community.
- Both high-risk and population approaches should be respected.
- Health professionals in local government should play a key role in frailty prevention in a community.
- “Think globally, act locally.”
Direction of Health Promotion for the Elderly in “Healthy Japan 21 (secondary), 2013”

- Longer healthy life expectancy / Closing the health gap
- Improving QOL of individuals
  - Maintaining physical, mental and social functions
  - Preventing geriatric syndromes
- Improving social environment
  - More opportunities for social participation
  - Improving access to support for health
  - Health promotion based on community network
- Preventing long-term care or delaying it
- Social participation and contribution
  - Good food and nutrition
  - Physical activity and strength
  - Social participation and network
- Improving QOL of individuals
  - Maintaining physical, mental and social functions
  - Preventing geriatric syndromes