Explanation of how to address anxieties regarding human health effect of radiation

Action in Nagasaki University / Kawauchi Village Base

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Fukushima City
Koriyama City
Kawauchi Village

30 km
20 km

Fukushima Prefecture
Decontamination with in the village

Restarting of elementary and junior high schools

Opening of convenience store

Restarting of agriculture
Rate of residents who returned back to Kawauchi Village (April 2014)
Establishment of Nagasaki University/ Kawauchi Village Reconstruction Promotion Base in Kawauchi Village (April 2013)

Mission

1. Evaluation of effectiveness of decontamination through the measurement of radionuclides in soils.
2. Evaluation of risks of internal exposure through the measurement of foods and waters.
3. Health consultation with inhabitants according to the results of above mentioned measurements.
4. Health promotion of inhabitants.
Evaluation of effectiveness of decontamination through the measurement of radionuclides in soils (December 2011)

(Taira et al. Plos One 2012)
Health consultation and door-to-door visiting by a nurse of Nagasaki University (May 2012)

I stayed for an extended period to conduct individual consulting on radiation exposure and health.
Odds ratio and 95% confidence interval for returning home, as assessed by logistic regression analysis

<table>
<thead>
<tr>
<th>Variable</th>
<th>Unit</th>
<th>Odds ratio</th>
<th>95% confidence interval</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td>(Women/Men)</td>
<td>2.43</td>
<td>1.13-10.45</td>
<td>0.03</td>
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<tr>
<td>Living area</td>
<td>(High/Low)</td>
<td>3.60</td>
<td>1.42-9.17</td>
<td>0.01</td>
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<tr>
<td>Employment</td>
<td>(Yes/No)</td>
<td>0.44</td>
<td>0.18-1.08</td>
<td>0.07</td>
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<tr>
<td>Anxiety about radiation exposure</td>
<td>(Yes/No)</td>
<td>8.91</td>
<td>3.23-24.58</td>
<td>&lt;0.01</td>
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<td>Anxiety about consumption of contaminated food</td>
<td>(Yes/No)</td>
<td>0.69</td>
<td>0.27-1.77</td>
<td>0.43</td>
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<td>Difficulty for shopping</td>
<td>(Yes/No)</td>
<td>0.46</td>
<td>0.16-1.33</td>
<td>0.15</td>
</tr>
</tbody>
</table>

(Orita et al. Rad Prot Dosim 2013)
Individual consultation on radiation exposure and health effects

Working as a public health nurse in charge of the health consultation concerning radiation exposure and health effects.

【Frequent asked questions from residents】
● Children’s health risk residing in the village.
● Basic knowledge about radiation.
● Future aspect on the return to their home.
Establishment of radiation health risk sciences, corresponding to social needs after the accident at Fukushima nuclear power plant.
The radioactive contaminant survey for the mushroom collected in Kawauchi Village
Activities of Nagasaki University in the Village
Area 1
Areas in which evacuation orders are ready to be lifted

Area 2
Areas in which the residents are not permitted to live

Area 3
Areas where it is expected that the residents have difficulties in returning for a long time
Evaluation of personal evaluation doses for residents who desire to return their homes is located in the evacuation order areas.

- **Areas in which the residents are not permitted to live**
- **The village office**
- **30km**
- **20km**
- **Fukushima Dai-ichi Nuclear Power Plant**
- **Fukushima Dai-ni Nuclear Power Plant**

Areas in which the residents are not permitted to live
Measurement of Individual Doses of Radiation by Personal Dosimeter is Important for the Return of Residents.

1. Measurement of individual doses using personal dosimeters.
3. Measurement of doses estimated from the concentrations of radionuclides the soil around the residential houses.
Relationship between individual doses and cumulative ambient doses.

*; p<0.01 vs personal dose

Accumulated radiation dose (mSv/y)

- Individual dose: 0.71
- In front of the entrance: 3.28
- Backyard: 4.73
- Field: 6.38
- Field: 9.26
Evacuation Order Area of the village have been rearranged from October 2014

With long-term follow up of environmental monitoring and individual dose evaluation, as well as reconstruction of infrastructure, residents may return to their homes.
Conclusion

Close cooperation between Nagasaki University and Kawauchi village would be a model for reconstruction after the accident.

It is important to implement risk communications with residents, based on the data of actually measured to address the residents’ anxieties about radiation exposure.

With the Atomic Bomb Disease Institute playing a central role, we plan to continue our activities as we offer Fukushima support from Nagasaki University.