Mortality risk in elderly evacuees after the Fukushima nuclear plant accident

福島原子力発電所事故後の高齢者の避難による死亡リスクに関する研究

Supervisor: Professor Kenji Shibuya

School of International Health

Admission in April, 2011

Shuhei Nomura (ID: 41-116111)

Objective: To assess mortality risks associated with evacuation of elderly residents from nursing homes after a major radiation accident.

Methods: A total of 715 residents admitted to five nursing homes in Minamisoma city, Fukushima Prefecture in the five years before 11th March 2011 were enrolled in this retrospective cohort study. Demographic and clinical characteristics were drawn from facility medical records. Evacuation histories were tracked until the end of 2011. The evacuation's impact on mortality was assessed using mortality incidence density and Cox proportional hazards regression.

Results: Overall relative mortality risk after the earthquake was 2.68 (95% CI: 2.04 – 3.49). There was a substantial variation in mortality risks across the facilities, ranging from 0.77 (95% CI: 0.34 – 1.76) to 2.88 (95% CI: 1.74 – 4.76). No meaningful influence of evacuation distance on mortality was observed although the first

evacuation from the original facility caused significantly higher mortality than subsequent evacuations, with a hazard ratio of 1.94 (95% CI: 1.07 – 3.49).

Conclusion: High mortality due to initial evacuation, suggests that evacuation of the elderly was not the best life-saving strategy for the Fukushima nuclear disaster. Careful consideration of the relative risks of radiation exposure and the risks and benefits of evacuation is essential. Facility-specific disaster response strategies, including in-site relief and care, may have a strong influence on survival. Where evacuation is necessary, careful planning and coordination with other nursing homes, evacuation sites and government disaster agencies is essential to reduce the risk of mortality.