

An Investigation on the applicability of game theory: an analysis of the decision making process between patients and nurses in a hospice setting.

Miyuki Matsubara¹.

1. Kure University , Faculty of Nursing,

Table 1. The Four Patients

| Patient | A | B | C | D | total |
|---|--------------------|------------------------------------|------------------------------------|-------------------------|-------|
| Age | in the low sixties | in the late seventies | in the low sixties | in the late sixties | |
| Sex | Male | Male | Female | male | |
| Primary disease | lung cancer | prostate cancer | lung cancer | liver cancer | |
| Year they became sick | 2001 | 1998 | 1994 | 2002 | |
| Treatment methods | chemotherapy | operation, radiation, chemotherapy | operation, radiation, chemotherapy | operation, chemotherapy | |
| Length of a hospitalization in palliative care wards (days) | 51 | 89 | 99 | 26 | |
| Length of observation before death | 3 weeks to 2 weeks | 6 weeks to 1 weeks | 10 weeks to 6 weeks | 2 weeks to 1 weeks | |
| Recording times | 2 | 10 | 6 | 3 | 21 |
| Percent of recording times (%) | 10 | 52 | 24 | 14 | 100 |
| Total recording hours (minutes) | 120 | 720 | 310 | 210 | 1360 |
| Percent of total recording hours (%) | 9 | 53 | 23 | 15 | 100 |

Table 2. The Eights Nurses

| Nurses | Nurse's Ages | Nurse's Sex | Nurse's License | Conflict situations |
|--------------|--------------|-------------|-----------------|---------------------|
| T | 30's | Female | R.N. | 3 |
| U | 40's | Female | R.N. | 4 |
| V | 30's | Female | R.N. | 1 |
| W | 30's | Female | R.N. | 3 |
| Y | 30's | Female | R.N. | 5 |
| X | 50's | Female | R.N. | 2 |
| Z | 50's | Female | Assistant Nurse | 2 |
| S | 50's | Female | Assistant Nurse | 1 |
| Total(times) | | | | 21 |

Table 3. Catheter Insertion and Prisoners' Dilemma Pay-Off Matrix

| | | Nurse Y's strategy | |
|----------------------|--------------------------|----------------------------------|------------------------------|
| | | C' (not to recommend catheter) | D' (to recommend catheter) |
| Patient B's strategy | C (insertion catheter) | (9,9) | (1,10) |
| | D (non insertion) | (10 , 1) | (2 , 2) |

10>9>2>1 , Nash equilibrium and Pareto optimality (2 , 2)

Table 4. Outcomes of Prisoners' Dilemma Game

| | | Nurse Y's strategy | |
|----------------------|-----------------------|----------------------------------|------------------------------|
| | | C' (not to recommend catheter) | D' (to recommend catheter) |
| Patient B's strategy | C(insertion catheter) | (insertion catheter) | (insertion catheter) |
| | D(non insertion) | (non catheter) | (non catheter) |