**Supplementary material 1. Characteristics of patients transferred more than once and details of their transfers**

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| ID | Sex | Age | Primary disease | Level of need for care or support | Availability of caregivers | Date | Reason for transfer | Person deciding EMS use | Outcome |
| 1 | Female | 2 | Low-birth-weight infant Lissencephaly | Not certified | Informal caregiver available | Feb. 2018 | Seizure | Those other than HCPs | Hospitalized |
| 1 | Female | 3 | Low-birth-weight infant Lissencephaly | Not certified | Informal caregiver available | Jun. 2018 | Suspected pneumonia | HCPs other than physician | Hospitalized |
| 1 | Female | 4 | Low-birth-weight infant Lissencephaly | Not certified | Informal caregiver available | Jul. 2019 | Fever, Spasm | HCPs other than physician | Hospitalized |
| 2 | Female | 4 | Hypoplastic left heart syndrome | Not certified | Informal caregiver available | Mar. 2019 | Spasm | Those other than HCPs | Hospitalized |
| 2 | Female | 4 | Hypoplastic left heart syndrome | Not certified | Informal caregiver available | May. 2019 | Spasm | Those other than HCPs | Hospitalized |
| 3 | Female | 70 | Putaminal haemorrhage | Care level 5 | Informal caregiver available | Jan. 2019 | Influenza | Physician (during visits) | Hospitalized |
| 3 | Female | 71 | Putaminal haemorrhage | Care level 5 | Informal caregiver available | Jun. 2019 | Vomiting | Physician (on the phone) | Hospitalized |
| 4 | Female | 88 | Lumbar compression fracture | Care level 4 | Formal caregiver available | Jun. 2019 | Fall | Physician (on the phone) | Returned home |
| 4 | Female | 88 | Lumbar compression fracture | Care level 4 | Formal caregiver available | Jul. 2019 | Respiratory discomfort | Physician (during visits) | Hospitalized |
| 5 | Female | 96 | Chronic heart failure | Care level 4 | Informal caregiver available | Sep. 2019 | Respiratory discomfort | Physician (on the phone) | Hospitalized |
| 5 | Female | 96 | Chronic heart failure | Care level 4 | Informal caregiver available | Dec. 2019 | Worsening of respiratory status | Physician (on the phone) | Hospitalized |
| 6 | Male | 3 | Cervical cord injury | Not certified | Informal caregiver available | Jan. 2019 | Spasm | Those other than HCPs | Hospitalized |
| 6 | Male | 4 | Cervical cord injury | Not certified | Informal caregiver available | May. 2019 | Hemoptysis | Those other than HCPs | Returned home |
| 7 | Male | 17 | Neurofibromatosis type1 | Not certified | Informal caregiver available | Sep. 2019\_1 | Excess phlegm | Those other than HCPs | Returned home |
| 7 | Male | 17 | Neurofibromatosis type1 | Not certified | Informal caregiver available | Sep. 2019\_2 | Cyanosis | Those other than HCPs | Returned home |
| 8 | Male | 36 | Cerebral contusion | Not certified | Informal caregiver available | Aug. 2019 | Suspected pneumonia | Physician (during visits) | Hospitalized |
| 8 | Male | 36 | Cerebral contusion | Not certified | Informal caregiver available | Dec. 2019\_1 | Fever | Physician (during visits) | Hospitalized |
| 8 | Male | 36 | Cerebral contusion | Not certified | Informal caregiver available | Dec. 2019\_2 | Suspected peritonitis | Physician (during visits) | Returned home |
| 9 | Male | 65 | Stomach cancer | Care level 2 | No caregiver available | Mar. 2019 | Pain | Those other than HCPs | Hospitalized |
| 9 | Male | 65 | Stomach cancer | Care level 2 | No caregiver available | Apr. 2019 | Fall | Those other than HCPs | Hospitalized |
| 10 | Male | 90 | Alzheimer's disease | Care level 5 | Informal caregiver available | May. 2019 | Aspiration pneumonia | Physician (during visits) | Hospitalized |
| 10 | Male | 90 | Alzheimer's disease | Care level 5 | Informal caregiver available | Aug. 2019 | Pain | Physician (during visits) | Hospitalized |
| 11 | Male | 90 | Prostate cancer | Care level 3 | Informal caregiver available | Dec. 2018 | Fall | Those other than HCPs | Returned home |
| 11 | Male | 91 | Prostate cancer | Care level 3 | Informal caregiver available | Apr. 2019 | Respiratory distress | Those other than HCPs | Hospitalized |

EMS=emergency medical service

HCP=healthcare professional