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Factors associated with home visits in a 5-year longitudinal study of acute respiratory distress syndrome survivors

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Abstract

Background: Participant retention is vital for longitudinal studies. Home visits may increase retention, but little is known about which subset of patients they may be useful for.

Objectives: To evaluate patient-related variables associated with home visits.

Methods: In a 5-year longitudinal multi-site prospective study of 195 ARDS survivors, in-person assessments were conducted at a research clinic; home visits were offered if participants could not attend the clinic. Using multivariable random-intercept logistic regression models, we evaluated the association between having a home visit and prior follow-up visit status and baseline and in-hospital patient variables. In a subsequent regression model adjusted for these variables, we then evaluated the association of the patient's post-hospital clinical status with home visits.

Results: Participants had a median age of 49 years, were 44% female, and 58% white. The following (adjusted odds ratio; 95% confidence interval) had independent associations with home visits: age (per year: 1.03; 1.00, 1.05), prior incomplete visit (2.46; 1.44, 4.19), and prior home visit (8.24; 4.57, 14.86). After adjustment for prior visit status and participants' baseline and

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hospitalization variables, the following post-hospital patient outcomes variables were associated with subsequent home visit: instrumental activities of daily living (2 vs <2 dependencies: 2.32; 1.29, 4.17), EQ-5D utility score (per 0.1 decrease: 1.15; 1.02, 1.30), and 6-minute walk distance (per 10% decrease in percent predicted distance: 1.50; 1.26, 1.79).

Conclusions: Home visits were important for retaining study participants who were older and more physically impaired, helping reduce selection bias from excluding such participants.

Keywords

Acute Respiratory Distress Syndrome; Intensive Care; Cohort Retention; Patient Outcomes Assessments; Prospective Studies; Follow-Up Studies

BACKGROUND

With increasing survivorship after critical illness, patient outcomes after hospital discharge are increasingly important to understand.^{1–3} Studies of these patient outcomes reveal significant impairments for years following hospitalization.^{4–9} Understanding these post-discharge outcomes requires rigorous studies with few patients lost to follow-up.¹⁰ Loss to follow-up introduces selection bias,¹¹ as participants lost to follow-up may have more severe impairments in functional and socioeconomic status.^{11,12}

Many strategies and resources can help improve retention rates.^{13,14} Such strategies include conducting home visits when studies require in-person assessments, for participants who otherwise would not return to complete a study assessment at a research location.^{15–18} Home visits involve research personnel going to the participant rather than having the participant come to a centralized research location. Home visits require planning and additional resources. Knowing factors associated with home visits can help with study design and resource planning. Hence, our objective was to use data from a multi-site, 5-year longitudinal study of acute respiratory distress syndrome (ARDS) survivors to evaluate factors associated with home visit.

METHODS

Study Population and Design

Patients from 13 intensive care units (ICU) within 4 teaching hospitals in Baltimore, MD were recruited if mechanically ventilated and diagnosed with acute lung injury (ALI) according to the American-European Consensus Conference criteria that were in effect at the time of the study.^{19,20} Consistent with the more recent Berlin definition, we use acute respiratory distress syndrome (ARDS), rather than ALI hereafter.²¹ Individuals were excluded if >96 hours between ARDS diagnosis and enrollment, >5 days of mechanical ventilation before enrollment, pre-existing ARDS when transferred to a study ICU, a life expectancy of less than six months based on pre-ARDS comorbidities, limitation in care at the time of enrollment (e.g. other than a sole “do not resuscitate” order), prior lung resection, inability to speak or understand English, or no fixed address.

Participants completed a battery of patient-reported and performance-based assessments at each follow-up visit scheduled for 3, 6, 12, 24, 36, 48 and 60 months after ARDS onset. Loss to follow-up was minimized using published retention methods, including: sending participants a letter describing the study with a magnet with study logo and contact phone number; visit reminders via phone and letter; free meal vouchers for use while at the research clinic; free parking or taxi rides; thank you letters; annual newsletters and birthday cards; and flexible timing for study assessment (e.g. early or late in the day, and weekend). Moreover, home visits were offered to those unable to come to the research clinic.^{13,20,22–24}

Primary Outcome

The primary outcome, and dependent variable for this study, was receiving a home visit, which could occur at each follow-up visit (yes/no).

Factors Evaluated for Association with Home Visits

We captured participant characteristics prior to hospitalization, during hospitalization, at the time of hospital discharge and over the course of the 60-month follow-up. Pre-hospital status included whether or not the participant resided at home with healthcare services (yes/no), endorsed chronic fatigue (yes/no), could walk at least 5 minutes without stopping (yes/no), and the EQ-5D. The EQ-5D's Visual Analogue Scale (VAS) score (range: 0–100; higher is better) and utility score (range: –0.11 to 1.0; higher is better) were both evaluated.²⁵ Additional baseline participant characteristics collected from the medical record included demographics (age, sex, race, employment status, and education level), Functional Comorbidity Index (FCI; range: 0–18; higher is worse),²⁶ history of excessive alcohol use or illicit drug use, and baseline psychiatric comorbidity. Hospitalization factors included duration of mechanical ventilation, ICU stay, and hospital stay. Measures collected at hospital discharge included chronic shortness of breath, independent in all ADLs (yes/no), and discharge location. In addition, starting at the second follow-up visit (i.e. 6 months after ARDS), the following variables describing the patient at the immediately preceding visit were coded: missing the visit, having an incomplete visit, and having a home visit. These baseline hospital and visit characteristics were selected *a priori* for this analysis based on existing studies and clinical judgement.

Similar to the pre-hospital status variables, we collected participant status at each follow-up visit, including: independent in all ADLs (yes/no), Instrumental Activities of Daily Living (IADLs; dichotomized as ≥2 vs. <2 IADL dependencies),²⁷ chronic shortness of breath, living location, Hearing Handicap Inventory for Adults-Screening (HHIA-S) score,²⁸ unemployment due to health, EQ-5D VAS and utility scores, SF-36 Physical Component Score (PCS) and SF-36 Mental Component Score (MCS) (age- and sex-matched standardized score, mean=50, SD=10; higher score is better),²⁹ Hospital Anxiety and Depression Scale (HADS) anxiety and depression subscales scores (for each, range: 0 to 21; lower score is better, with scores ≥8 indicating substantial symptoms),³⁰ Impact of Event Scale-Revised (IES-R; range: 0 to 4; lower score is better with ≥1.6 indicating substantial symptoms),^{31,32} 6-minute walk test (percent of predicted value),³³ Manual Muscle Test (MMT; score range: 0 to 60; higher score is better),³⁴ hand grip strength (percent of predicted value),³⁵ forced expiratory volume in 1 second (FEV1%; percent of predicted

value), and maximal inspiratory pressure (MIP; percent of predicted value).³⁷ Note that these participant status variables were recorded for all, regardless of whether the participant was assessed at home or the research clinic. At each follow-up, the reason for not having the visit at the research clinic was noted.

Statistical Analysis

Participants were first categorized based on ever vs. never receiving a home visit, with comparison for each patient factor (using Fisher's exact test or Wilcoxon rank-sum test as appropriate).

Using the data from 6- to 60-months, each baseline, hospital and prior-visit factor was separately correlated with receiving a home visit. This was done via a logistic regression model that also included indicators for follow-up time and a random intercept for each participant to account for the correlation of receiving a home visit over time within each participant.

Then, if a baseline, hospital or prior-visit factor contained less than 20% missing data and a statistically significant association in the bivariable regression model (at $p < 0.05$), it was selected for subsequent multivariable analysis. In cases where a factor was measured at admission, during hospital stay and/or discharge, preference was given to including the discharge measurement in the multivariable model. The association of change over time between these selected factors and home visit was evaluated using a second set of these models that included an interaction term between these factors and the indicators for follow-up time. In addition, a random-intercept, multivariable model including all of these selected factors and indicators for follow-up time was used to evaluate the association of this set of variables with receiving a home visit. Finally, we correlated whether the participant received a home visit or not at a given follow-up with the participant status variables measured at the same follow-up via a random intercept logistic regression model, adjusted by the selected baseline, hospital and prior-visit factors (selected as described above). This model also included an indicator for follow-up time and an indicator for whether the participant status variable was missing or not at the given follow-up time.

A two-sided p -value < 0.05 was used to indicate statistical significance in all tests and models. All statistical analyses were performed using SAS® version 9.4 (2013, Cary, NC). Ethics approval was obtained from the Johns Hopkins Medicine Institutional Review Board (NA_00025950, NA_00041630), University of Maryland, Baltimore Institutional Review Board (HCR-HP-00053863) and VA Research & Development Committee (H-26354). Written consent was obtained for each participant.

RESULTS

The cohort used in this analysis was comprised of 195 of the 196 consenting participants who survived to 3-month follow-up (Figure 1, one comatose patient was excluded from analysis). The median age of participants was 49, with 44% female, 58% white, 63% having had no more than high-school education, 39% employed prior to ARDS, 45% having alcohol or drug abuse, and 26% any psychiatric comorbidity (Table 1).

Over the five years of follow-up (7 follow-up time points), the percentage of participants with a home visit decreased (39% at 3-months, 35% at 6-month, 23% at 60-months). For the 125 participants with 1 home visit, on average, half of their research visits were conducted at home (median 50% [IQR 29%, 100%]). Participants with 1 (vs. 0) home visits tended to be older (51 vs. 45 years, $p<0.01$) and white (66% vs. 44%, $p<0.01$) with a longer median hospital length of stay (30 vs. 23 days, $p<0.01$).

Of the participants' 21 baseline and hospital factors evaluated, 7 had statistically significant associations with a home visit from 6-months to 5-years after ARDS (Table 2). Among prior-visit factors, having a prior incomplete visit and a prior home visit were significantly associated with a subsequent home visit from 6 months to 5 years after ARDS (Table 2). History of alcohol or drug abuse, psychiatric morbidity, and both the baseline EQ-5D VAS and utility scores showed no association with home visits (Table 2).

The following nine factors were included in the multivariable models: age, white race, having no more than a high-school education, FCI, mechanical ventilation duration, discharged to home with services, shortness of breath at hospital discharge, having an incomplete prior visit, and having a prior home visit (Table 2). In the same models, when including the interaction terms between these factors and follow-up time indicators, none of the interaction terms were statistically significant (data not shown), indicating that the relationship between these factors and home visit remained relatively constant over the five years after ARDS. In a single, random intercept multivariable logistic model including only these aforementioned factors and follow-up time, the following factors remained significantly associated with a home visit (odds ratio; 95% confidence interval): age (per year: 1.03; 1.00, 1.05), prior visit incomplete (2.46; 1.44, 4.19), and prior home visit (8.24; 4.57, 14.86) (Table 2).

In the multivariable models evaluating participant status after hospital discharge during the 6 to 60-month follow-up period, the following measures were associated with a home visits: IADL dependency (2 vs <2 dependencies: 2.32; 1.29, 4.17), EQ-5D utility score (per 0.1 decrease: 1.15; 1.02, 1.30) and 6-minute walk distance (per 10% decrease in percent predicted distance: 1.50; 1.26, 1.79) (Table 3).

Overall, participant illness was the most common reason for not coming to the research clinic, and also the most prevalent in the earlier follow-up period, up to 24 months (Table 4). By 36 months, travel distance to the clinic was the most common reason.

DISCUSSION

In this multi-site prospective cohort study evaluating long-term outcomes in 195 ARDS survivors, baseline and hospital factors associated with a home visit were age, white race, having no more than a high-school education, FCI score, duration of hospital mechanical ventilation, having been discharged to home with services, and shortness of breath at hospital discharge. Following hospitalization, factors strongly associated with having a home visit at subsequent follow-up were having a prior incomplete visit or a prior home visit. After adjusting for these significant baseline and follow-up factors, participant dependency

in two or more IADLs, lower EQ-5D utility score, and a lower percent predicted 6-minute walk test score at follow-up were independently associated with increased odds of having a home visit.

Retention of participants in longitudinal studies is important to maintain statistical power and reduce threats to internal validity.^{38,39} Participant and hospital factors associated with need for home visit during follow-up point to sicker and older participants. Retention and loss-to-follow-up prevention should not only be a priority in longitudinal cohort studies but also randomized clinical trials because the confounding prevented by randomization could be lost through exclusion of the very sick. Many of the participants with home visits gave illness as the reason for not attending the clinic visit, and the factors measured at follow-up which increased the odds of a home visit are largely measures of physical function. If home visits were not provided, these participants would not be included and there would be bias towards younger, healthier participants.³⁹ History of alcohol or drug abuse, psychiatric morbidity, and both the pre-hospitalization EQ-5D VAS and utility scores had no association with home visits. We did not collect data on recency of alcohol or drug abuse, nor level of psychiatric morbidity control and it is possible that these were remote or well controlled enough to not affect current behavior in our study. We suspect that baseline function on the EQ-5D was less important than expected because the incident ARDS illness caused such a profound change in all subjects that differences in baseline function were erased.

Participant retention requires good planning, time, and targeted effort.^{40,41} As such, retention methods that could help these participants come in for follow-up should be implemented first, including paying for transportation for those who live far away from clinic, flexibility of scheduling, incentives, etc.^{13,42,43} Additionally, providing home visits is a valuable technique to retain participants who would otherwise be lost to follow-up.^{15,44} As more hospitals and clinicians consider establishing post-discharge ICU recovery clinics for ICU survivors, these findings may provide some preliminary insights into the characteristics of patients who may not be seen in hospital-based follow-up clinics. Of note, some published work on this type of clinic have shown attendance rates in below 50%.⁴⁵⁻⁴⁷

There are potential limitations to this study. First, participants' pre-hospitalization health, physical function, and quality of life status were obtained based on retrospective interviews, which may have introduced recall bias. The inability to obtain prospective pre-hospitalization status is an inherent challenge in studies involving ARDS patients given the emergent and unpredictable nature of ARDS onset. Second, the cohort retention efforts employed in this study may differ from other studies, which may impact interpretation of those findings. Finally, these results may not be generalizable to other patient populations.

Despite these limitations there are significant strengths to the study. Notable strengths include our low levels of participant loss to 5-year longitudinal follow-up, and extensive collection of pre-hospitalization, in-hospital, and longitudinal post-hospital status for evaluation as risk factors for loss to follow-up. Additionally, our team was well-trained and adhered to the study's detailed, published, retention protocol.²⁴ Finally, the longitudinal design allowed us to examine changes in associations over time, with the finding that

associations between evaluated factors and requirement for home visit remained relatively constant over time.

Conclusions

It is well-known that critical care survivors, including patients with ARDS are often burdened with lasting physical and mental health morbidities after hospital discharge. This study demonstrates that age and physical function during follow-up are independently associated with requirement for home visits as part of a longitudinal follow-up study. This highlights the need for studies to have comprehensive retention strategies such as home visits; since had the present study not conducted home visits, older and less physically able participants would have missed follow-up visits and study results would have been biased.

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Figure 1:

Flow diagram of study participants

^a Cohort for this analysis is N=195; 1 patient provided no data since he was comatose at 3 months and died soon thereafter.

^b Patients were initially consented for 3, 6, 12 and 24-month follow-up visits. Upon receipt of a new grant for follow-up until 60 months, patients provided new informed consent for the extended follow-up duration. The start of funding for this extended follow-up was delayed, resulting in 15 patients missing their 36-month visit.

Table 1.

Baseline participant characteristics for those alive at 3-month visit

	N	All patients N=195 ^{1,2}	Patients with no home visits N=70	Patients with 1 home visit N=125 ³
Pre-hospitalization				
Age (years)	195	49 (40, 57)	45 (37, 53)	51 (41, 61) **
Male, No. (%)	195	109 (56)	39 (56)	70 (56)
White race, No. (%)	195	113 (58)	31 (44)	82 (66) **
No more than high school education, No. (%)	183	116 (63)	40 (59)	76 (66)
Education (years)	183	12 (11, 14)	12 (12, 14)	12 (11, 14)
Functional Comorbidity Index	195	1 (1, 3)	1 (0, 2)	2 (1, 3) *
Alcohol or drug abuse, No. (%)	195	88 (45)	31 (44)	57 (46)
Psychiatric comorbidity (any), No. (%)	195	51 (26)	19 (27)	32 (26)
No previous uncontrolled psych condition, No. (%)	192	177 (92)	66 (94)	111 (91)
Able to walk for at least 5 minutes, No. (%)	191	154 (81)	55 (80)	99 (81)
Residing at home without services, No. (%)	193	178 (92)	66 (94)	112 (91)
Unemployed, No. (%)	190	116 (61)	36 (52)	80 (66)
Chronic fatigue, No. (%)	193	68 (35)	19 (27)	49 (40)
EQ-5D Visual Analogue Scale (range: 0 to 100)	152	75 (50, 90)	78 (50, 90)	75 (50, 90)
EQ-5D Utility Score (range: -0.04 to 1.0)	158	0.8 (0.5, 1)	0.8 (0.6, 1)	0.8 (0.5, 1)
During hospital stay or at hospital discharge				
Length of mechanical ventilation (days)	195	10 (6, 18)	8 (5, 15)	10 (6, 24)
Intensive Care Unit length of stay (days)	195	15 (10, 24)	14 (8, 19)	15 (11, 28) *
Hospital length of stay (days)	195	26 (17, 38)	23 (15, 33)	30 (19, 45) **
Discharged to home without services, No. (%)	194	49 (25)	22 (31)	27 (22)
Discharge shortness of breath, No. (%)	158	45 (28)	13 (21)	32 (33)
Dependent in any ADLs at discharge, No. (%)	194	146 (75)	47 (67)	99 (80)

Abbreviations: ICU, intensive care unit

¹Median (interquartile range) unless otherwise stated.²One participant provided no data since he was comatose at 3 months and died soon thereafter.³Comparisons between participants with vs without home visits conducted using Fisher's exact test for proportions and Wilcoxon rank-sum test to compare medians.***
p<0.001;**
p<0.01;*
p<0.05

Table 2.

Association of baseline participant, hospital and prior-visit factors with home visits

	Unadjusted OR ¹ (95% CI)	p-value	Adjusted OR ² (95% CI)	p-value
Pre-hospitalization				
Age (years)	1.08 (1.04, 1.12)	<0.001	1.03 (1.00, 1.05)	0.027
Female	1.20 (0.45, 3.19)	0.718		
White race	5.38 (2.01, 14.37)	<0.001	1.78 (0.97, 3.27)	0.063
No more than high school education	3.01 (1.04, 8.72)	0.043	0.66 (0.37, 1.17)	0.156
Education (for 1 less year)	1.08 (0.90, 1.30)	0.409		
Functional Comorbidity Index	1.62 (1.15, 2.28)	0.006	1.18 (0.97, 1.45)	0.098
Alcohol or drug abuse	1.29 (0.49, 3.44)	0.606		
Psychiatric comorbidity (any)	1.44 (0.48, 4.33)	0.518		
No previous uncontrolled psych condition	1.23 (0.19, 7.73)	0.829		
Unable to walk for at least 5 minutes	1.11 (0.32, 3.88)	0.869		
Not residing at home without services	1.65 (0.27, 10.18)	0.592		
Unemployed	2.55 (0.92, 7.03)	0.071		
Chronic fatigue	1.74 (0.62, 4.87)	0.292		
EQ-5D VAS (for every 10 point increase)	1.02 (0.84, 1.24)	0.841		
EQ-5D Utility score (for every 0.1 point decrease)	1.11 (0.91, 1.36)	0.311		
During hospital stay or at hospital discharge				
Mechanical ventilation duration (per 7 days)	1.32 (1.03, 1.69)	0.028	0.96 (0.82, 1.12)	0.587
ICU length of stay (per 7 days)	1.21 (0.99, 1.48)	0.063		
Hospital length of stay (per 7 days)	1.15 (0.99, 1.34)	0.069		
Discharged to home with services	3.34 (1.09, 10.20)	0.035	0.84 (0.42, 1.68)	0.626
Discharge shortness of breath	4.34 (1.40, 13.46)	0.011	0.85 (0.43, 1.68)	0.624
Dependent in any ADLs at discharge	3.13 (1.00, 9.80)	0.050		
Prior visit factors during follow-up				
Immediate prior visit not missed	1.56 (0.61, 3.95)	0.352		
Immediate prior visit incomplete	3.31 (1.94, 5.66)	<0.001	2.46 (1.44, 4.19)	<0.001
Immediate prior visit is home visit	13.46 (8.30, 21.84)	<0.001	8.24 (4.57, 14.86)	<0.001

Abbreviations: ADL, Activities of Daily Living; VAS, Visual Analog Scale; ICU, intensive care unit

¹Each row represents a separate logistic regression model to evaluate the association of the specific factor having a home visit over longitudinal follow-up. Each regression model includes indicators for follow-up time and a random intercept for participant to account for the correlation of receiving a home visit over time within each participant. Factors with p<0.05 in bold.

²Multivariable logistic model including all factors with p<0.05 from preceding column. The model includes indicators for follow-up time and a random intercept for participant to account for the correlation of receiving a home visit over time within each participant. Factors with p<0.05 in bold.

Table 3.

Association of participant status following hospitalization with home visits

Participant status measure	Adjusted OR ^I (95% CI)	p-value
Not residing at home	2.73 (0.94, 7.91)	0.065
Dependent in any Activities of Daily Living	1.61 (0.80, 3.24)	0.182
Dependent in 2 Instrumental Activities of Daily Living	2.32 (1.29, 4.17)	0.005
Shortness of breath	1.18 (0.69, 2.02)	0.553
Hearing Handicap Inventory for Adults-Screening	1.02 (0.99, 1.05)	0.148
Unemployed due to health	0.93 (0.49, 1.75)	0.815
Unemployed	1.22 (0.61, 2.43)	0.574
EQ-5D Visual Analogue Scale (for every 10 point decrease)	1.01 (0.88, 1.15)	0.933
EQ-5D Utility score (for every 0.1 point decrease)	1.15 (1.02, 1.30)	0.019
SF-36 Physical Component Score (for every 10 point decrease)	1.20 (0.93, 1.54)	0.162
SF-36 Mental Component Score (for every 10 point decrease)	1.12 (0.90, 1.39)	0.293
Hospital Anxiety and Depression Scale Anxiety Score	1.42 (0.79, 2.55)	0.236
Hospital Anxiety and Depression Scale Depression Score	1.06 (0.57, 1.97)	0.847
Impact of Event Scale-Revised Total Score	1.07 (0.56, 2.07)	0.828
6-minute Walk Test, % Predicted (for every 10% decrease)	1.50 (1.26, 1.79)	<0.001
Manual Muscle Testing Score	0.89 (0.32, 2.48)	0.823
Grip, % predicted (for every 10% decrease)	1.17 (0.99, 1.38)	0.060
MIP, % predicted (for every 10% decrease)	1.03 (0.95, 1.12)	0.481
FEV1%, predicted (scaled by 10)	1.18 (0.97, 1.44)	0.100

Abbreviations: SF-36, Short-Form 36; MIP, Maximal Inspiratory Pressure; FEV1%, ratio of forced expiratory volume in 1 second

^I Each row represents a separate logistic regression model adjusted for follow-up time, age, race, having no more than high school education, Functional Comorbidity Index, mechanical ventilation duration, discharged to home with services, shortness of breath, prior home visit, and prior incomplete visit. Each regression model includes indicators for follow-up time and a random intercept for participant to account for the correlation of receiving a home visit over time within each participant. Factors with p<0.05 in bold.

Table 4.

Reason visit was not conducted in research clinic

Number of participants Number with home visit (%)	3 Months 174 67 (39%)	6 Months 173 60 (35%)	12 Months 156 47 (30%)	24 Months 146 47 (32%)	36 Months 115 29 (25%)	48 Months 126 31 (25%)	60 Months 123 28 (23%)
Patient-Related Reason at Time of Visit [/]							
Illness	20 (30%)	20 (33%)	13 (28%)	16 (34%)	8 (28%)	10 (32%)	7 (25%)
Distance too far from research clinic	8 (12%)	12 (20%)	13 (28%)	11 (23%)	9 (31%)	10 (32%)	11 (39%)
Perceived lack of interest in clinic visit	9 (13%)	8 (13%)	6 (13%)	8 (17%)	5 (17%)	6 (19%)	6 (21%)
In long-term care	15 (22%)	10 (17%)	5 (11%)	5 (11%)	2 (7%)	3 (10%)	2 (7%)
Lack of time	3 (4%)	5 (8%)	9 (19%)	4 (9%)	4 (14%)	1 (3%)	1 (4%)
In acute care hospital	11 (16%)	3 (5%)	0 (0%)	0 (0%)	1 (3%)	0 (0%)	0 (0%)
Unknown	1 (1%)	2 (3%)	1 (2%)	3 (6%)	0 (0%)	1 (3%)	1 (4%)

[/] Over the 5-year longitudinal follow-up, 339 home visits were completed due to the following reasons (count, % of all home visits): illness (94, 30%), distance too far from research clinic (74, 24%), perceived lack of interest in clinic visit (48, 16%), in long-term care (42, 14%), lack of time (27, 9%), in acute care hospital (15, 5%), and unknown (9, 3%)