



The frequency of and reasons for acute hospital transfers of older nursing home residents



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ABSTRACT

The purpose of the study was to examine the frequency of and reason for transfer from nursing homes to the emergency department (ED), whether these transfers led to admission to a hospital ward, and whether the transfer rate differs as a function of type of nursing home provider and to identify the frequency of avoidable hospitalizations as defined by the Swedish Association of Local Authorities and Regions (SALAR).

The design was retrospective, descriptive. Data were collected in a Swedish municipality where 30,000 inhabitants are 65 years or older. Structured reviews of the electronic healthcare records were performed. Included were residents living in a nursing home age 65+, with healthcare records including documented transfers to the ED during a 9-month period in 2010.

The transfer rate to the ED was 594 among a total of 431 residents ($M = 1.37$ each). 63% resulted in hospitalization ($M = 7.12$ days). Nursing home's transfer rate differed between 0.00 and 1.03 transfers/bed and was higher for the private for-profit providers than for public/private non-profit providers. One-fourth of the transfers were caused by falls and/or injuries, including fractures. The frequency of avoidable hospitalizations was 16% among the 375 hospitalizations. The proportion of transfers to the ED ranged widely between nursing homes. The reasons for this finding ought to be explored.

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1. Introduction

It may be a physical and mentally stressful experience for the frail older person to visit a noisy, busy ED (Murray & Laditka, 2010), as it may result in acute confusion and potentially a decline in health (Kihlgren, Nilsson, Skovdahl, Palmblad, & Wimo, 2004; Shanley, Sutherland, Stott, Tumeth, & Whitmore, 2008). Hospitalization entails a risk for nosocomial infections, inadequate information exchange between care facilities and discontinuities in care for nursing home residents (Ong, Sabanathan, Potter, & Myint, 2011; Ouslander, Weinberg, & Phillips, 2000; Payne, Hardey, & Coleman, 2000). Moreover, high mortality has been reported among older persons from nursing homes who had been admitted to hospitals (Menec, MacWilliam, & Aoki, 2002). The avoidance of inappropriate and unnecessary transfers may potentially have an economic benefit to society (Ackermann, Kemle, Vogel, & Griffin, 1998; Briesacher, Field, Baril, & Gurwitz, 2008; Grabowski, O'Malley, & Barhydt, 2007; Ouslander et al., 2010). Despite this, several studies have reported a high proportion of hospitalization and use of the ED among older people in general

and nursing home residents in particular (Ackermann et al., 1998; Callahan et al., 2012; Givens, Selby, Goldfeld, & Mitchell, 2012; Intrator, Castle, & Mor, 1999; Miller, Gozalo, & Mor, 2001).

Studies have also shown that transfers from nursing homes to EDs can be avoided (Naylor, Kurtzman, & Pauly, 2009; Ouslander et al., 2010, 2000; Saliba et al., 2000), for example by increasing the extent to which some symptoms are treated in the nursing home (Caplan et al., 1999; Lamb, Tappen, Diaz, Herndon, & Ouslander, 2011; Young, Barhydt, Broderick, Colello, & Hannan, 2010). However, the question has also been raised as to whether older people from nursing homes are transferred unnecessarily to EDs, or whether the high transfer rate reflects an actual need (Jensen, Fraser, Shankardass, Epstein, & Khera, 2009).

An aging population and the increasing requirement for a robust health and nursing home care system are becoming more evident globally (Knickman & Snell, 2002; WHO – World Health Organization, 2012). The current healthcare policy in Sweden favors older persons remaining in their homes as long as possible (SFS, 2001: 453 Social Services Act). Most older persons are about 80 years of age when they move to a nursing home, and the group of older nursing home residents tend to have multiple illnesses and medically complex situations (Akner, 2009). According to the SALAR, older people are a prioritized group within the system of care for older people in Sweden. To enable these persons to receive treatment for chronic conditions and at the same time avoid

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inappropriate, potentially harmful hospitalization, both cooperation and coordination of care information between primary care and nursing homes are needed (SALAR, 2012).

In Sweden, healthcare is financed primarily through taxation. It is mostly the municipalities that are responsible for long-term care of older people, for example home-based care and nursing homes (SALAR, 2010). Swedish nursing homes have traditionally been run by the local community and to some extent by private non-profit providers. During recent years, however, increasing numbers of private for-profit providers have established themselves on the market (Stolt & Winblad, 2009). Previous studies from the US have shown that nursing homes run by private for-profit providers are more likely to send residents to hospital than are public or private non-profit providers (Carter & Porell, 2005; Konetzka, Spector, & Limcangco, 2008). Whether such a pattern is also seen in Sweden remains to be investigated.

Decreasing the number of transfers to hospital from nursing homes has been an important policy goal for several decades (SALAR, 2012). From a health-promotion perspective, it is important to achieve high-quality care based on the needs of older people, and several established indicators are used to measure quality of care, for example identifying and preventing falls, avoiding unnecessary inpatient care and readmission to hospital within 30 days since last discharge (SALAR, 2010). According to SALAR, the number of unplanned transfers of older people to hospital varies in different regions of the country (SALAR, 2008). Older adults who live in nursing homes are more likely to be frail, and a hospital stay is more likely associated with negative health outcomes, therefore we wished to study a Swedish municipality with many transfers (SALAR, 2009) of older persons from nursing homes to the ED. In Sweden, there are very few studies describing this phenomenon, and we will closely examine the frequency of and especially the reasons for these transfers.

The aim of the present study was: (1) to examine the frequency of and reasons for transfer from nursing homes to the ED, whether these transfers led to admission to a hospital ward, and whether transfer rate differs as a function of type of nursing home provider, (2) to identify the frequency of avoidable hospitalizations as defined by SALAR and (3) the frequency of re-transfer to the ED, re-hospitalization and mortality within a 30-day period after transfer to the ED.

2. Design and method

A retrospective, descriptive design was used. The data were collected using a structured review of the electronic healthcare records.

2.1. Setting

The study took place in a city in central Sweden, where 30,000 inhabitants (15% of the population) were over 65 years of age (Statistics Sweden, 2011). At the time of the study, the community had 32 nursing homes, whereof 23 were classified as private for-profit providers, seven as public providers and two as private non-profit providers. The private for-profit provider nursing homes were run by five different private entrepreneurs that had been in business in Sweden for a number of years. The private non-profit providers were foundations located in the community. The total number of beds at the nursing homes at the time of the study was 1420 with a range of 16–90 beds per nursing home. According to unpublished data from the municipality, in year 2011, the RN to resident ratio varied between 1:13–40 per weekday during daytime hours.

The registered nurses (RNs) at the nursing homes work weekdays during daytime hours. During evenings, nights and

weekends, on-call RNs are responsible for making emergency visits to nursing homes, each RN being responsible for several facilities. The general practitioner (GP), employed by the public primary care organization, visits the nursing home a few hours a week. The RNs are solely responsible for informing the GP about the status of all patients and about which patients are in need of medical assessment. The RNs are responsible for nursing care and for creating a medical care plan for each patient together with the GP and family members. According to municipal guidelines, a GP should be contacted before sending a patient to the ED. A written referral note should accompany the patient to the ED, together with the patient's medication list and medical history. The RN is to document the reason for transfer and the patient's symptoms on the referral note.

2.2. Study population

The inclusion criteria were: residents living in one of the 32 nursing homes in the Swedish community, age 65+, with healthcare records including documented transfers to the ED during the 9-month period, January to September, 2010. First, subjects were identified through the municipal administrative register, which documents care and services provided to each individual. Second, they were matched with the patient data in the ED to capture all individuals who had been transferred to the ED from their respective nursing homes.

2.3. Data collection and analysis

The data were collected by studying the electronic healthcare records of all residents transferred to the ED from their respective nursing homes. For each subject, the variables collected and written on a structured, study-specific form were: age at transfer, sex, nursing home, staff involved in decision to transfer, date and reason for transfer to hospital, admission to a hospital ward (yes/no), number of days spent in hospital, death at hospital or at the nursing home during a period of one month after referral/discharge from hospital and the patient International Classification of Diseases version 10 (ICD-10) code at discharge from hospital (ICD-10, 2011). Data on the reason for transfer were collected from the nursing home referral note and from the medical health record at the ED. Referral notes existed for 389 (65%) transfers and they were written by 335 RNs (56%), by 37 physicians (6%) and by 17 other staff (3%). The scanned nursing home referral notes were missing in 35% ($n = 205$) of the healthcare records. The reason for transfer is therefore based solely on the physician-documented complaint in the medical healthcare records at the ED.

The data were analysed using the statistical program IBM SPSS statistics version 20 and are presented using descriptive statistics and non-parametric analyses. The data were divided into: (1) all transfers from nursing home to the ED; (2) individual level data on transfers from nursing home to ED, as several individuals had been transferred more than once. All symptom descriptions, i.e. complaints according to the ED physician's report, were listed and grouped into categories in agreement with ICD-10 codes (ICD-10, 2011) (see Table 1). Avoidable hospitalizations, according to SALAR (2010), are: anemia, asthma, diabetes, congestive heart failure, hypertension, chronic obstructive lung disease (COLD), angina, bleeding ulcer, diarrhea, epileptic seizure, inflammatory diseases of the female genital organs, kidney infection and ear, nose and throat infection. SALAR specifies each of the above diagnoses using ICD codes; to read more about these see the SALAR reference. The rationale for avoidable hospitalization is that some chronic conditions can be treated with favorable results in primary care, as can some acute conditions if given adequate and timely treatment (SALAR, 2010). In the present study, avoidable

Table 1

Frequency of transfers to the ED, reasons for transfer to ED, proportion of admittance to a ward for the listed reasons and complaints.

Transfers		Complaints at ED	ICD-10	Admittance to ward		Readmitted within 30 days after discharge from ward	
<i>n</i>	%			<i>n</i>	%	<i>n</i>	%
147	25	Falls and/or injuries incl fractures	(S00–T98) Injuries, poisoning, certain other consequences of external causes	56	38	6	11
67	11	Respiratory symptoms	(J00–J99) Respiratory diseases	62	93	7	11
60	10	Gastrointestinal	(R10) Pain from abdomen and pelvis	40	67	3	7
55	9	CNS symptom	(I60–I63) Diseases of the cerebral arteries	40	73	4	10
51	9	General deterioration: weakness	<i>There is no equivalent code</i>	44	86	3	7
50	8	Infection UVI, fever, sepsis, pneumonia	(B99) Other non-specific infections	50	100	3	7
46	8	Pain, not specified	<i>There is no equivalent code</i>	14	30	4	28
37	6	Cardiovascular symptoms Ex.DVT, heart failure, shock	(I00–I99) Circulatory diseases	22	59	2	9
32	5	Urinary problems (not UVI related) KAD, hematuria, urinary retention	(R30–R39) Symptoms and signs of urinary systems	14	44	3	20
26	4	Miscellaneous, e.g. emergency cases, anemia, abnormal lab	<i>There is no equivalent code</i>	19	73	4	21
21	4	Chest pain	(R07.4) Chest pain unspecified	13	62	0	0
2	0.3	Cardiac arrest	(I46) Cardiac arrest unspecified	1	50 ^a	1	100
594		Total		375	63% of <i>N</i> = 594 transfers	40	11% of <i>n</i> = 375 admitted

^a Patient.

hospitalizations (admissions to a hospital ward), according to SALAR, were identified using the ICD-10 codes in patients' health care records reported at discharge.

Each nursing home's proportion of transfers to the ED was calculated by dividing the number of transfers by the number of beds. Mann–Whitney *U*-test, two-tailed (Pallant, 2010), was used to compare the ratio of transfers across private for-profit, private non-profit and public providers. The three forms of elderly care were divided into two groups based on whether or not the enterprises are intended to make a profit: (1) public and private non-profit providers versus (2) private for-profit providers. A *p*-value of 0.05 was chosen to indicate significance.

2.4. Ethical considerations

The study was approved by the Regional Ethical Review Board in Uppsala, Sweden (2009/411). All data have been treated confidentially and no persons can be identified (Codex, 2011). The ethical requirements laid down in the Helsinki Declaration were followed (Declaration of Helsinki, 2008).

3. Results

3.1. Transfers

During the study period, the frequency of transfers to the ED was *n* = 594. On average 2.28 transfers were registered per day during weekdays (range 0–7, SD = 1.47) and 1.96 during weekends (range 0–5, SD = 1.31). The peak referral day was Thursday (*M* = 2.62) and Saturday had the lowest transfer rates (*M* = 1.95). No differences were found as a function of seasonal changes. Of the 594 transfers, 375 (63%) resulted in hospitalization, i.e. the resident was admitted to a hospital ward. Average

length of hospitalization was 7.12 days (range 1–56, SD = 6.4). Hereafter the residents are referred to as patients.

The nursing home's proportion of transfers to the ED during the study period ranged between 0.00 and 1.03 transfers/bed. The transfer rate was higher for the private for-profit providers than for the public/private non-profit providers (*M* = 0.48, SD = 0.22, *Md* = 0.49, range = 0.10–1.03 vs *M* = 0.25, SD = 0.17, *Md* = 0.23, range = 0.00–0.63; *z* = 2.6, *p* = 0.009).

The most frequent conditions that led to patients being referred to the ED were: falls and/or injuries including fractures, respiratory symptoms, gastrointestinal complaints, CNS symptoms and general deterioration (see Table 1).

According to the medical healthcare records at the ED, 25% (*n* = 147) of referrals were caused by falls and/or injuries including fractures. Of these transfers, 38% resulted in hospitalization. Of the transfers made because of respiratory symptoms and infections, 93% and 100%, respectively, of patients were admitted to a hospital ward for further observation and treatment (see Table 1).

The frequency of avoidable hospitalizations, as defined by SALAR, among the 375 hospitalizations was *n* = 59 (16%): anemia (*n* = 2, ICD code: D509), asthma (*n* = 2, ICD code: J45–46), diabetes (*n* = 1, ICD code: E118) congestive heart failure (*n* = 30, ICD code: I50, I110, J81), COLDF (*n* = 12, ICD code: J41–44, J47 (main diagnose), J120 together with J41–44, J47 (as secondary diagnose), bleeding ulcer (*n* = 4, ICD code: K250, K260), epileptic seizure (*n* = 4, ICD code: G40, R56) and ear, nose and throat infection (*n* = 4, ICD code: J02, J06).

3.2. Patients

During the 9-month study period, 431 residents (women *n* = 299, 69%; age *M* = 87.0, SD = 7.2, range 65–103 years) were

Table 2
Frequency of patients transferred to the ED or a ward within 30 days after discharge from hospital.

	1st transfer <i>n</i>	2nd transfer <i>n</i>	3rd transfer <i>n</i>	4th transfer <i>n</i>	5th transfer <i>n</i>	6th transfer <i>n</i>	7th transfer <i>n</i>
Patients to ED	431	31	17	5	1	1	1
Due to previous complaints		14	6	2	1	1	1
Due to new complaints		17	11	3	–	–	–
Hospitalized	277	22	8	3	1	–	–
Re-hospitalized within 30 days after discharge from a hospital ward		21	4	2	1	–	–

transferred from their respective nursing homes to the ED, and transfers occurred in 31 of the 32 residential facilities during the study (30% of $N = 1420$ beds). The residents were transferred to the ED from once to seven times each ($M = 1.37$, $SD = 0.72$) (see Table 2). The residents had on average 2.7 medical diagnoses, beside the acute complaint ($SD = 1.28$, range 1–7). Of the 431 patients transferred to the ED for the first time during the study period, 277 (64%) were admitted to a hospital ward and 154 (36%) returned to the nursing home after evaluation at the ED. One patient was declared dead upon arrival at the ED; the cause of death documented by the physician was cardiac arrest. After having been discharged from the ED or hospital, 31 (7%) were re-transferred to the ED within a 30-day period from the first ED visit. Twenty-two of the 31 patients were hospitalized due to their complaint, and for 21 of them this was their second hospitalization within a 30-day period. Their average age was 86 years, twenty had 3–4 diagnoses each and 19 were women. Ten of the patients were re-hospitalized for the same symptoms they presented with at the first hospitalization. Of those 10 re-hospitalized patients, three were hospitalized for a diagnosis described in SALAR as avoidable hospitalization.

Of the 431 patients, 66 (15%) died within one month after the transfer to the ED: one patient died at the ED, 31 patients (7% of $n = 431$) died during hospitalization, 34 patients (8%) died at their respective nursing homes after being discharged. Of the latter 34 patients, 17 died within two weeks and 17 within a month after transfer to the ED. The causes of deaths, besides for the patient who died at ED, is not known in this study.

4. Discussion

We have investigated the frequency of transfers to the ED from nursing homes and of patient admissions to hospital in a Swedish community during a 9-month period. Of the 594 transfers of a total of 431 residents, 63% resulted in hospitalization. The transfer rate ranged between 0.00 and 1.03 transfer/bed and was higher for the private for-profit providers than for public/private non-profit providers. One-fourth of the transfers were caused by falls and/or injuries including fractures. The frequency of avoidable hospitalizations, as defined by SALAR, was 16% among the 375 hospitalizations.

In our study, a total of 375 hospitalizations were recorded among 431 nursing home residents. Given the number of transfers in relation to nursing homes beds, our study shows a mean hospitalization rate of 0.35 per resident-year. Recently, Graverholt et al. (2011) reported on acute hospital admissions among nursing home residents in Bergen, Norway. Their study showed a hospitalization rate of 0.62 per person-year, which is twice as high as in our study. However, Norway organizes primary care of nursing home residents differently, which is why a comparison of the two results might be problematic. Whether transfers to the ED, or the hospitalization rates resulting from these ED visits, are high or low can be questioned, and it may be more relevant to ensure that older persons receive care at the appropriate level.

Private for-profit providers are relatively new in Sweden. In 2008, about 14% of all nursing homes in Sweden were operated by private for-profit providers, and these are concentrated to the metropolitan areas in Sweden (Stolt, Blomqvist, & Winblad, 2011). The same year, 29% of older persons in the Municipality of Uppsala lived in nursing homes run by private for-profit providers, and in 2012, this rate had increased to 76% (Municipality of Uppsala, 2013). In the present study, 23 of the 32 nursing homes are run by private for-profit providers and the majority of the transfers were made by private for-profit providers. This finding is in accordance with US studies, which have also shown that the hospitalization rate is substantially higher for private for-profit providers (Carter & Porell, 2005; Dobalian, 2004; Konetzka et al., 2008).

The most common reasons for transfers to the ED were falls and/or injuries including fractures, which is in accordance with studies conducted in Norway and Australia, which in addition reported respiratory problems as one of the main diagnoses (Graverholt et al., 2011; Ingarfield et al., 2009). It has also been reported that infections, even if it can be argued that they are potentially avoidable, are one of the most common reasons for hospitalization in this population (Givens et al., 2012). In our study, only 8% of the transfers were caused by infections and all resulted in hospitalization, which indicates that the infections were serious and probably not treatable in the nursing home. The average length of hospitalization was two days longer in our study than the stay durations reported by others (Graverholt et al., 2011). Because Graverholt and co-workers also reported a higher hospitalization rate, one could speculate that the patients in our study were hospitalized for more serious conditions.

Based on what is known about the risks associated with sending older persons to the hospital for care (Ong et al., 2011; Ouslander et al., 2010; Payne et al., 2000), one could argue that it should be established that there are no options other than acute hospital care before deciding to initiate such transfers. It has been reported that nursing home residents often are hospitalized for preventable conditions, for instance infectious diseases and severe pressure ulcer, and that mortality rates are higher for this group (Boockvar et al., 2005). In the present study, 16% of the transfers resulting in hospitalization were due to diagnoses that are considered avoidable, for example congestive heart failure and COLA. The rationale for avoidable hospitalization is that some chronic conditions can be treated with favorable results in primary care, as can some acute conditions if given adequate and timely treatment (SALAR, 2010). Data on avoidable hospitalizations need to be interpreted with caution, as this is a retrospective study based on health care records. The circumstances surrounding each case are not completely known.

A study carried out in the US showed that RNs, together with family members, are involved in the decision-making process and are largely responsible for initiating discussions leading to hospital transfers (Cohen-Mansfield & Lipson, 2003). This is to be expected, as nurses have the highest medical competence in nursing homes. One recent study revealed that nurses feel they are alone in taking decisions on whether or not to transfer older persons to the ED

(Kirsebom, Wadensten, & Hedstrom, 2013). The decision-making process is complex for nurses (Ellis, 1997), and factors that are important include having trust in the organization and knowing that a physician can be contacted (Kihlgren, Forslund, & Fagerberg, 2006). Transfers initiated by nurses may be explained by their wish not to put their “nursing license on the line”, causing them not to hesitate in transferring residents to the ED (McCloskey, 2011). All of the above might explain why a third of the residents who were transferred to the ED were not admitted after medical evaluation. Further, one Chinese study suggests that there is an “over reliance on ED” among providers, which may be due to inappropriate primary care (Tang et al., 2010). Advanced care plans, regularly updated, are important individual guidelines for how to treat residents’ acute illnesses in nursing homes and for taking decisions about the need for transfers of residents to the ED (Caplan, Meller, Squires, Chan, & Willett, 2006; Kirsebom et al., 2013). Improved primary care in nursing homes has also been found to reduce transfers to the ED (Codde et al., 2010), and it has been shown that intravenous therapy may be a cost-efficient intervention (Intrator, Zinn, & Mor, 2004). Additionally, it has been suggested that a well-implemented structured transfer checklist be used across care settings to reduce acute hospital transfers in this population (Terrell & Miller, 2011). However, previous studies have reported that advanced care directives are not always followed in an acute situation and that family members may influence the decision to hospitalize (Dobalian, 2004). Some nursing homes have as a policy not to treat acute illnesses in the facility (Zimmerman, Gruber-Baldini, Hebel, Sloane, & Magaziner, 2002). These aspects were not investigated in the present study, but could be interesting to follow up in future studies.

The notion that increasing RN staffing could lower transfer rates has been discussed (Carter & Porell, 2005; Konetzka et al., 2008). In addition, nursing homes with nurse practitioners with a Master’s or PhD degree have been shown to have fewer hospitalizations (Intrator et al., 2004). Hence, increasing staffing and competence among RNs appear to be one way to reduce transfers to the ED and hospitalizations among nursing home residents.

Hospital care is more expensive than nursing home care. If transfers are prevented by applying acute-care medical health-care in nursing home facilities, cost savings may occur (Zimmer, Eggert, Treat, & Brodows, 1988). Transfers to the ED are expensive in terms of ambulance costs, evaluation at the ED, hospital admission and subsequent return to the nursing home (Grabowski et al., 2007; Kayser-Jones, Wiener, & Barbaccia, 1989). The cost of a transfer that does not result in hospitalization is estimated at roughly 727 EUR (164 EUR/hour for the ambulance ambulatory and 564 EUR for the ED evaluation). According to this pricing estimate, the total cost for all 594 patients was around 425,000 EUR. On a yearly basis, this would correspond to 570,000 EUR. It is important to note that we do not suggest, based on the present results, that older persons should not be transferred to the ED. Rather the older person often has complex medical problems, and multiple co-morbidities is a predictor for the number of hospital admissions (Condellius, Edberg, Jakobsson, & Hallberg, 2008). However, it would seem reasonable to assume that a higher competence level among RNs and improved collaboration between the nursing home and primary care could improve the professional care while remaining financially sustainable.

4.1. Method discussion

The strength of the present study is that it includes all transfers from all nursing homes to one ED in one municipality. The intention was to study transfers during all 12 months of 2010, however, the municipality implemented new guidelines, which

enabled older persons to be directly admitted to a hospital without passing through the ED. Due to this change, the decision was made to reduce the study period to 9 months and thus the study period ends when this new routine began. There are some limitations to the present study. We were not able to study the severity of illness of the older persons who were sent to ED, or the reasons for this transfer, because in many cases the written information on the referral note was incomplete or missing. Instead, the physician-documented complaint in the medical healthcare records at the ED was used. The time for arrival at the ED was unfortunately not possible to determine due to inconsistencies in the documentation. In this study, the causes of death outside the ED were not investigated and consequently not known. There is a clear need for studies describing how RNs act before deciding whether or not to transfer a patient. This study was conducted in a metropolitan area and cannot be generalized to all nursing homes in which older persons are cared for. Therefore, there is a need for similar studies in other settings.

5. Conclusion

On average, 2–3 residents per day were transferred to the ED from the studied nursing homes. The primary reasons for transfer were falls and/or injuries including fractures. More than half of the residents transferred to the ED were hospitalized, for an average of 7.12 days, and 16% of these hospitalizations were identified as possibly avoidable, according to SALAR. The proportion of transfers to the ED ranged widely between nursing homes, and the private for-profit providers referred residents to the ED more often than the public and private non-profit providers did. The reasons for this finding ought to be explored.

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