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Electronic Communication Capabilities of Residential Care Facilities at Times of Transition

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Older adults are more frequently discharged from the hospital to post-acute care facilities for recovery.¹ Readmissions from these facilities are also increasing: 30-day readmission rates rose from 18 to 24% between 2000 and 2006.² Improved communication between residential care facilities (RCFs) and hospitals may facilitate safer care transitions and reduce harm to older adults.³⁻⁴ However, little is known about the communication capabilities of RCFs with hospitals; thus, we sought to describe these capabilities in a national sample of RCFs.

METHODS

We analyzed data from facility directors at 2,302 RCFs participating in the 2010 National Survey of Residential Care Facilities (NSRCF), a nationally-representative probability sample survey of RCFs (<http://www.cdc.gov/nchs/nsrcf.htm>). The primary outcomes were RCFs that could 1) produce computerized discharge or transfer summaries or 2) electronically exchange information with a hospital. We used multivariable logistic regression to identify characteristics of RCFs associated with these outcomes, including factors with bivariate $p < 0.10$ in the models. Since our outcomes were relatively infrequent, we could not produce reliable weighted results. Our results should therefore be interpreted

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as a large unweighted national survey of RCFs, rather than as a true nationally-representative weighted sample.

RESULTS

Overall, 1,476 (64.1%) facilities indicated having some computerized capabilities. Many fewer (493 [21.4%]) could generate a computerized discharge or transfer summary, while only 127 (5.5%) were able to electronically exchange information with a hospital.

Factors associated with the ability to generate a computerized summary (unadjusted $p < 0.10$) included facility characteristics (non-profit ownership, larger facility size, longer waitlist time, provision of skilled nursing services, registered nurse hours per patient per day), and cost characteristics (less residents using Medicaid as a payor source, more expensive monthly costs, and more residents moving out due to costs). Longer waitlists, provision of skilled nursing services, and more expensive monthly costs were associated with electronic information exchange with hospitals (Supplemental Appendix).

Facilities that provided skilled nursing services were more likely to have both capabilities in multivariable analysis. In addition, long waitlist times were associated with electronic information exchange capabilities, while more expensive, larger facilities were more likely to be able to produce a computerized summary (Table 1).

DISCUSSION

The most important finding of this study is that less than one quarter of RCFs can generate a computerized discharge or transfer summary, and less than six percent have the ability to electronically exchange information with a hospital. These findings have substantial patient safety implications given 35% of RCF residents visited the Emergency Department in the year prior to the survey, and 24% were hospitalized.⁵

These capabilities stand in striking contrast to skilled nursing facilities (80% have computerized summaries),⁶ efforts to adopt electronic health records (EHRs) through the HITECH act,⁷ and our digital age, where information transfer in many other healthcare venues and other non-healthcare industries occurs easily and reliably.

However, important barriers exist to RCFs adopting electronic systems for information exchange. First, we found that smaller facilities may not have the resources nor incentive to implement an EHR, which may be why more expensive facilities that provided more services were more likely to have electronic information exchange capabilities. This barrier may not be as formidable as it seems, however, given 55% of RCFs use at least one core component of an EHR.⁸

The second barrier is creating systems that are interoperable and contribute meaningfully to patient outcomes.⁹ RCFs are usually not hospital-affiliated, and thus would need to be able to communicate with multiple hospital systems.

The third barrier is that RCFs are regulated by states, not the federal government. This may explain the large discrepancy between RCFs and skilled nursing facilities and implies new requirements for information exchange capabilities would have to be proposed by a national payor (i.e., Medicare or Medicaid) or regulated on a state-by-state level.

While the NSRCF's large size and generalizability constitute strengths of this study, several limitations are relevant. First, facility characteristics are self-reported and are not validated. However, bias (if present) would likely tend towards facility directors over-reporting capabilities. Second, the survey focuses on characteristics of the RCFs rather than other potential factors of interest; for example, we are unable to link the use of improved information exchange with patient outcomes. Third, few facilities had these capabilities, limiting our statistical power to find smaller associations.

Communication problems between care facilities and hospitals are common,¹⁰ result in potential harm to vulnerable older adults, and are likely to increase. Interventions to improve bidirectional communication between RCFs and hospitals are needed, ideally in conjunction with the development and distribution of more robust electronic health records at RCFs.⁷

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1

Multivariable-Adjusted Associations between Facility Characteristics and Electronic Information Exchange Capabilities

RCF Characteristic	Computerized Summaries OR (95% CI)	Electronic transfer OR (95% CI)
<u>Nonprofit or government ownership</u>	1.63 (1.17-2.25)	--
<u>Residents using Medicaid as a payor source</u>		
20-49%	1.14 (0.81-1.61)	--
50%	1.40 (1.00-1.95)	--
<u>Cost per month, single occupancy</u>		
\$2300-3199	1.44 (1.01-2.05)	1.16 (0.59-2.29)
>\$3200	1.63 (1.15-2.31)	1.68 (0.90-3.12)
<u>Residents moving out due to cost</u>		
5%	0.94 (0.65-1.35)	--
5.1-24.9%	1.38 (0.74-2.58)	--
25%	1.24 (0.74-2.08)	--
<u>More than 10 years of operation</u>	0.91 (0.68-1.23)	--
<u>Facility size</u>		
11-25 beds	1.47 (1.02-2.13)	--
26-100 beds	1.71 (1.12-2.61)	--
>100 beds	1.53 (0.74-3.16)	--
<u>Length of waitlist time</u>		
15-99 days	0.89 (0.61-1.29)	1.45 (0.75-2.79)
>100 days	1.24 (0.86-1.79)	2.31 (1.29-4.15)
<u>Provides skilled nursing services</u>	1.52 (1.15-2.04)	1.92 (1.18-3.13)
<u>RN hours per patient per day</u>		
Up to 0.249	0.92 (0.66-1.27)	--
0.25	0.94 (0.60-1.46)	--

Bold text denotes significant odds ratio. RCF = Residential care facility, OR = odds ratio, RN = registered nurse. Multivariable logistic regression models for the two outcomes include all factors with bivariate $p < 0.10$.