

ORIGINAL ARTICLE

Communication between office-based primary care providers and nurses working within patients' homes: an analysis of process data from CAPABLE

Patrick D Smith, Cynthia Boyd, Julia Bellantoni, Jill Roth, Kathleen L Becker, Jessica Savage, Manka Nkimbeng and Sarah L Szanton

Aims and Objectives. To examine themes of communication between office-based primary care providers and nurses working in private residences; to assess which methods of communication elicit fruitful responses to nurses' concerns.

Background. Lack of effective communication between home health care nurses and primary care providers contributes to clinical errors, inefficient care delivery and decreased patient safety. Few studies have described best practices related to frequency, methods and reasons for communication between community-based nurses and primary care providers.

Design. Secondary analysis of process data from 'Community Aging in Place: Advancing Better Living for Elders (CAPABLE)'.

Methods. Independent reviewers analysed nurse documentation of communication (phone calls, letters and client coaching) initiated for 70 patients and analysed 45 letters to primary care providers to identify common concerns and recommendations raised by CAPABLE nurses.

Results. Primary care providers responded to 86% of phone calls, 56% of letters and 50% of client coaching efforts. Primary care providers addressed 86% of concerns communicated by phone, 34% of concerns communicated by letter and 41% of client-raised concerns. Nurses' letters addressed five key concerns: medication safety, pain, change in activities of daily living, fall safety and mental health. In letters, CAPABLE nurses recommended 58 interventions: medication change; referral to a specialist; patient education; and further diagnostic evaluation.

Conclusions. Effective communication between home-based nurses and primary care providers enhances care coordination and improves outcomes for home-dwelling elders. Various methods of contact show promise for addressing specific communication needs.

What does this paper contribute to the wider global community?

- In all global communities, whether urban, suburban or rural, it is vital that care providers be able to communicate patient-specific needs that affect functional ability, safety and quality of life. This paper discusses potential communication models, evaluates the effectiveness of common mechanisms of communication and describes common needs of community-dwelling older adults; in doing so, it presents important suggestions for how clinicians and researchers may seek to advance effective care through improved and more standardised communication.
- Because structures of home care delivery vary greatly within and between individual countries, this paper's focus on the universal issue of care coordination increases its relevance within diverse global settings.
- Globally, chronic conditions and functional limitations account for a significant burden of disease and contribute to poorer outcomes for patients. While this paper focuses on the needs of a specific urban, low-income, functionally challenged sample, it describes strategies that all nurses may use to increase patient activation and directly address patients' ongoing concerns with primary care providers. As the incidence of chronic disease rises globally, these recommendations – on how nurses may improve patients' and caregivers' ability to collaboratively address ongoing needs – are increasingly relevant to the global community.

Authors: *Patrick D Smith*, Undergraduate BSN Candidate, Villanova University College of Nursing, Villanova, PA; *Cynthia Boyd*, MD, MPH, Johns Hopkins Bloomberg School of Public Health; Johns Hopkins School of Medicine, Baltimore, MD; *Julia Bellantoni*, Undergraduate BSc Candidate, Duke University, Durham, NC; *Jill Roth*, BSN, Johns Hopkins School of Nursing, Baltimore, MD; *Kathleen L Becker*, DNP, MSN, RN, CRNP, Johns Hopkins School of Nursing, Baltimore, MD; *Jessica Savage*, MSN, RN, BsPH, Johns Hopkins School of Nursing, Baltimore, MD; *Manka Nkimbeng*, RN, Johns Hopkins School of Nursing, Baltimore, MD; *Sarah L Szanton*, PhD, ANP, FAAN, Johns Hop-

kins Bloomberg School of Public Health; Johns Hopkins School of Nursing, Baltimore, MD, USA.

Correspondence: Patrick D Smith, 137 Beech Ave, Melrose, MA 02176, USA. Telephone: +1 617 771 1541.

E-mail: psmith22@villanova.edu

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Relevance to clinical practice. Nurses practicing within patients' homes can improve care coordination by using phone calls to address minor matters and written letters for detailed communication. Future research should explore implementation of Situation, Background, Assessment and Recommendation in home care to promote safe and efficient communication. Nurses should empower patients to address concerns directly with providers through use of devices including health passports.

Key words: communication, elders, home health, nursing, primary care

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Introduction

As the population of home-dwelling older adults in the United States grows, it is important that clinicians and researchers seek to advance coordination of care between home health care providers and office-based primary care providers (PCPs) who manage care for home-dwelling patients. However, because these providers are often unaffiliated in the United States, numerous factors, including physical distance and maintenance of separate medical records, impede consistent and effective coordination of care (Fairchild *et al.* 2002). Few studies have examined and described best practices related to frequency, methods and reasons for communication between nurses in patients' homes (places of usual residence) and PCPs. While the term 'primary care provider' is used throughout this paper to describe the clinician (physician, nurse practitioner, or physician assistant) tasked with medical management of a client, it should be noted that 'general practitioner' and 'internist' are equally appropriate descriptors.

This study is a secondary analysis of process data from the intervention groups of two complementary ongoing trials (a randomized controlled trial and one-armed trial) entitled 'Community Aging in Place: Advancing Better Living for Elders' (CAPABLE). The purposes of this secondary analysis and document review project are two-fold: to examine themes of communication between office-based primary care providers (PCPs) and CAPABLE nurses visiting patients' homes; and to assess what methods of communication successfully elicit PCP responses and address the range of concerns raised by clients and nurses. Data analysed included primary source letters as well as nurse documentation of communication between PCPs and CAPABLE nurses providing home visits.

Background

In 2010, adults aged 65 years and over comprised 13.0% of the US population, yet accounted for 33.9% of total

personal health care spending (Center for Medicare and Medicaid Services 2011, Warner 2011). At present, this population totals 40.3 million people and is growing at a faster rate than any other age group in the nation (Warner 2011). Older adults face a heavy burden of disease, disability and functional limitation due to age and various other factors; and effectively managing these conditions to reduce cost of care and improve quality of life necessitates the provision of high-quality care within elders' homes. Because PCPs practicing in the United States rarely evaluate older adults in the home setting, home health care nurses are uniquely positioned to anticipate and detect health-related issues unseen by primary care (Wolff *et al.* 2009). A lack of effective communication among clinicians contributes to potentially inappropriate medications, clinical errors and inefficient delivery of care (Ellenbecker *et al.* 2003, Bao *et al.* 2012, Crawford *et al.* 2012). Conversely, improved communication may reduce inappropriate prescriptions and enhance earlier detection and resolution of conditions associated with disability.

The numerous factors that inhibit effective communication between nurses and PCPs include personal biases or disrespect (Tjia *et al.* 2009, Desmond *et al.* 2010, Crawford *et al.* 2012), deficient time (Tjia *et al.* 2009), poor financial compensation (Marrone 2003), differences in nurses' and physicians' professional training (Sweet & Norman 1995, Brown *et al.* 2006) differing perceptions of communication (Street & Blackford 2001, Burke *et al.* 2004, Vazirani *et al.* 2005, Tjia *et al.* 2009) and the lack of an organised framework for communication (Fowkes *et al.* 1997, Crawford *et al.* 2012).

CAPABLE: programme aims and design

CAPABLE, from which this study abstracts data for analysis, is a set of two ongoing trials that seek to evaluate the degree to which a bundled intervention can mitigate environmental and intrinsic barriers to health for urban home-dwelling, low-income, functionally challenged older adults.

Over the course of four months, each participant (henceforth referred to as 'client') enrolled in the intervention group of either CAPABLE trial receives up to 10 coordinated in-home visits and up to \$1200 of home modifications and repairs from a licensed handyman. In-home visits include up to six sessions with an occupational therapist (OT) and up to four sessions with a registered nurse (RN), during which a client works with the CAPABLE team to identify, prioritize and address client-focused functional goals and health-related needs.

CAPABLE RNs work to improve functional ability, safety and self-efficacy by using motivational interviewing and brief interventions to address intrinsic factors that contribute to functional limitation, including pain, mood, strength and balance, medication management and contact with care providers. In reconciling medications, for instance, a nurse records each medication's dosage and frequency, the location in which medication is stored and whether or not a client uses a pill box; simultaneously, the RN asks the patient about cost, side effects and understanding of all medications to identify financial, educational and medical needs. Often, in discussing a client's goals, the RN uncovers concerns that prompt communication with PCPs to address a client's ongoing needs. CAPABLE nurses communicate with PCPs in any of three ways: by letter (delivered electronically or in hard copy), by phone call or by providing client coaching that allows the client to better address personal concerns with the PCP.

To supplement coaching, all clients also receive a 'health passport' in which they can write reminders for notes or questions about care. The health passport is a tool designed to holistically enhance interactions between health care providers, clients and family members by optimising communication regarding a client's health. It describes all aspects of a client's health in a structured document that facilitates organisation.

CAPABLE is supported by the following grants: National Institute on Aging grant #R01-AG040100; Robert Wood Johnson Nurse Faculty Scholars Program #69351; Center for Medicaid and Medicare Services #1C1CMS330970 (Szanton *et al.* 2014). Both CAPABLE trials have received ethical approval from the Johns Hopkins Medical Institutions Internal Review Board.

Using nurse documentation and primary source letters from nurse visits to low-income older adults' residences, this study aims to identify potential improvements in communication between nurses and PCPs to advance patient care.

Methods

Sampling

Participants in CAPABLE were recruited using targeted mailings and by referral from numerous community partners. At initial assessment, all clients were cognitively intact, aged 65 years or older, reported income less than or equal to 200% of the poverty level and reported difficulty with performing at least 1 activity of daily living (ADL) or at least 2 instrumental activities of daily living (IADL) (Szanton *et al.* 2014). Potential clients were excluded from the CAPABLE study if hospitalised more than 3 times in the previous 12 months; if already receiving in-home physical therapy, nursing services or occupational therapy; if diagnosed with a terminal condition or receiving active cancer treatment; or if dwelling in an apartment or planning to move within one year.

This study is based on the first 25 months of CAPABLE enrolment, from May, 2012–June 20th, 2014. As the control group in the CAPABLE RCT did not receive home visits from CAPABLE nurses, this analysis incorporates data only from the intervention arms of each CAPABLE trial. Altogether, 283 clients were eligible for inclusion in this secondary analysis, of which 70 had documented communication between nurses and PCPs. These 70 individuals constitute the sample used in the present analyses of communication between CAPABLE nurses and PCPs.

This secondary analysis has received ethical approval under the aegis of the larger CAPABLE study.

Data collection

Data on each client's demographic characteristics and overall health status were gathered by trained data collectors, using a standardised questionnaire, upon enrolment in CAPABLE. Each client self-reported, among other information, age, race, living status (living alone or with another person) and whether he or she had been hospitalised in the past year. At baseline assessment, CAPABLE nurses also recorded whether a client reported 'seeing a doctor' for each of the following comorbid conditions: hypertension, arthritis, high cholesterol, diabetes, depression, cancer, heart disease and 'other' conditions. 'Number of chronic conditions' was calculated by adding the total number of above conditions for each client.

Data on pain were gathered using the Brief Pain Inventory (Keller *et al.* 2004, Cleeland 2009) and the EURO-QOL (Van Reenan & Janssen 2015) and by asking each

client to rate the severity of his or her pain on a continuous scale of 0 (no pain) to 10 (severe pain). Depression was evaluated using the Patient Health Questionnaire-9 (PHQ-9), a clinically significant tool used to assess the severity of depressive symptoms (Kroenke *et al.* 2001). Clients were asked to record ordinal responses for nine questions, with higher responses indicating a higher level of depressive symptomology. Total scores for the PHQ-9 are equal to the sum of individual responses; responses are then grouped into 6 groups, with scores of 0, 1–4, 5–9, 10–14, 15–19 and 20–27 indicating ‘no depression’, ‘minimal depression’, ‘mild depression’, ‘moderate depression’, ‘moderately severe depression’ and ‘severe depression’ respectively.

Data on ADL limitation were assessed using a modified version of a scale developed by Katz *et al.* (1963) that required each client to rank his or her difficulty in performing eight activities of daily living. Total scores range from 0–16, with a score of ‘0’ indicating no ADL impairment and ‘16’ indicating severe ADL impairment. Similarly, IADL limitation was assessed using an eight-item questionnaire developed by Lawton and Brody (1969) that yielded a score of 0–16, with ‘16’ indicating greater impairment in performing IADLs.

Data for this current analysis are gathered from two main sources: digital copies of CAPABLE nurses’ letters to PCPs, and nurses’ documentation of communication-based interventions implemented throughout the study. More specifically, for all written communication, phone calls and client coaching efforts implemented by the study nurses, we analysed nurses’ electronic documentation of communication outputs and outcomes.

Analysis

We examined the distribution of values for sex, race, living arrangement and recent hospital admission status and compared distribution between clients for whom nurses initiated PCP contact and clients for whom nurses did not initiate contact (Table 1). Additionally, mean values and standard deviations were calculated for age, number of chronic conditions, depressive symptomology, pain severity, ADL score and IADL score and compared across the same groups (Table 2).

One goal of this study was to assess which method of communication – phone calls, letters or client coaching – proved most effective in eliciting a response from the PCP and addressing the concerns of a client or a nurse. For all communication methods included in the study, two primary outcome measures were recorded: whether a nurse’s contact elicited a response from the PCP and whether the CAP-

Table 1 Demographic Information

Category	Patients receiving nurse visits (<i>n</i> = 283) Frequency, %	Patients with Nurse-PCP Communication (<i>n</i> = 70) Frequency, %	Patients without Nurse-PCP Communication (<i>n</i> = 213) Frequency, %
Female	87.28	80.00	89.67
Black	80.57	82.86	79.81
Living alone	44.88	37.14	47.42
Hospitalised in previous year	35.34	37.14	34.74

ABLE nurse’s concerns were effectively addressed by the PCP at the time of the RN’s final (fourth) visit with the client. PCP responses were grouped as follows: ‘PCP replied to nurse communication’; ‘no response’; and ‘not documented’. PCP responses were also classified by the degree to which they addressed the suggestions of the CAPABLE nurse’s suggestions: ‘fully’; ‘partially’; ‘not at all’ or ‘not documented’. For efforts in client coaching, a nurse also documented whether or not a client self-reported that he or she followed through in raising questions or concerns with a PCP; follow-through was tabulated as ‘yes’, ‘no’ or ‘not documented’.

To assess what concerns, client needs and care management recommendations prompted nurses’ communication, two independent reviewers (PS and JB) read each nurse-written letter, noting all concerns and recommendations documented in the letter. Joint, collaborative analysis resolved three small discrepancies in classification of concerns and recommendations and confirmed all other classifications. Final analyses describe the percentage of clients for whom a nurse documented each concern or recommendation in the form of a letter. Additional descriptive data were used to further elucidate the types of medication-related concerns that prompted nurses to write letters. Additional analyses describe the response rate of PCPs to various communication methods and describe the percentage of concerns that were effectively addressed by the PCP at the time of the RN’s final (fourth) visit with the client.

Results

Descriptive statistics for the sample studied have been calculated and summarised in Tables 1 and 2.

The majority of communication between nurses and PCPs in this study was conducted through letters. 70 of

Table 2 Descriptive Health Indicators

Category	Patients receiving nurse visits (<i>n</i> = 283)		Patients with nurse-PCP communication (<i>n</i> = 70)		Patients without nurse-PCP communication (<i>n</i> = 213)	
	Mean	SD	Mean	SD	Mean	SD
Age	75.22	7.66	75.41	7.52	75.15	7.73
# of Chronic Conditions ¹	3.87	1.47	4.27	1.33	3.73	1.49
PHQ-9 Total Score ²	6.57	5.37	7.62	6.22	6.23	5.03
Pain Now ³	3.90	3.13	4.06	3.41	3.86	3.08
ADL Score ⁴	4.99	3.30	5.36	3.79	4.86	3.13
IADL Score ⁵	6.72	4.17	7.31	4.49	6.53	4.05

¹Number of chronic conditions was scored 0–8, with 8 indicating a higher degree of comorbidity.

²PHQ-9 total score was scored 0–27, with higher scores indicating greater depressive symptomology.

³Pain Now was scored 0–10, with 10 indicating severe pain.

⁴ADL Score was scored 0–16, with a higher score indicating greater functional impairment.

⁵IADL Score was scored 0–16, with a higher score indicating greater functional impairment.

283 eligible CAPABLE clients had at least one type of communication, with nurses writing letters on behalf of 45 clients, calling PCPs on behalf of 7 clients and providing client coaching to 22 clients. Four clients had multiple methods of communication implemented and documented.

Altogether, four RNs sent letters to PCPs on behalf of 45 clients – equivalent to 15.9% of the first 283 clients enrolled in the CAPABLE intervention groups. In each letter, a nurse introduced herself and the study, listed between one and four concerns related to a client’s safety, quality of life or treatment plan, and recommended changes in care that might address these concerns. The average number of concerns documented in each letter was 1.87, with a maximum of four concerns documented in a single letter.

Five key concerns were addressed in nurses’ letters: medication-related concerns, such as inability to adhere to the medication regimen or drug interactions; pain; change in client’s ability to perform ADLs; fall safety and unmet mental health needs, chiefly depression. Additional concerns that were identified for two or fewer clients were grouped into an ‘other’ category that included concerns such as incontinence, changes in speech and insomnia (Table 3).

Qualitative analysis was used to review the suggestions nurses made in letters. Altogether, in letters to PCPs,

Table 3 CAPABLE Nurse Concerns (*n* = 45 letters)

Concern	Letters (%)
Medication-related	57.78
Pain	48.89
Decline in ADL	31.11
Mental Health	11.11
Fall-Related	11.11
Other	26.67

CAPABLE nurses recommended a total of 58 actions to address the needs of these 45 clients: medication change; referral to a specialist or physical therapist; patient education; and further evaluation for diagnostic purposes (Table 4).

The 26 letters which raised medication-related concerns addressed the following conditions or symptoms: pain (15 letters, 58%), diabetes mellitus (7 letters, 27%), incontinence (5 letters, 19%), cardiovascular conditions (5 letters, 19%), hypocalcemia or vitamin D deficiency (4 letters, 15%); respiratory conditions (3 letters, 12%); and depression (3 letters, 12%). Nurses also advised changing current medication regimen due to the following concerns: a hypocoagulable state due to dual anti-platelet therapy (5 letters, 19%); allergies to current medications (2 letters, 8%); and financial burden related to medication regimen (2 letters, 8%); Nurses also requested: advice on use of over-the-counter (OTC) medications in 10 letters (38.5%), as providing recommendations on use of OTC medications is outside RNs scope of practice in Maryland, the study site; prescription for an assistive device (3 letters, 12%); and addressing of other needs (4 letters, 15%) (Fig. 1).

Of 45 letters written to PCPs, 56% elicited a response; 20% received no reply; and 24% had no outcome documented. Nurses used phone calls to reach providers in 7 instances. Of these, 86% elicited a response and 14% did not. Clients were coached to directly address concerns with

Table 4 CAPABLE Nurse Recommendations (*n* = 45 letters)

Nurse Suggestion	Letters (%)
Medication change	75.56
Referral	26.67
Patient Education	15.56
Evaluation	11.11

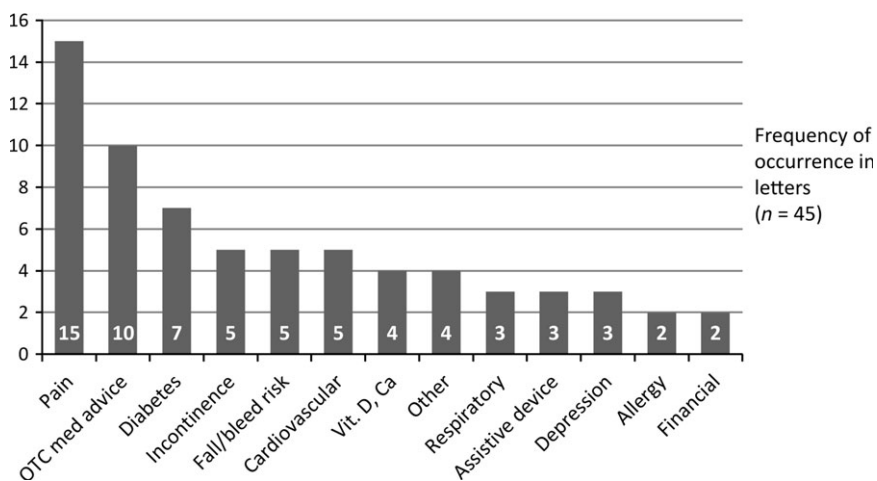


Figure 1 Medication Concerns.

their providers in 22 cases. Among those 22 cases, clients stated that providers responded to their concerns in 50% of cases; no response was received in 23% of cases; and 27% had no outcome documented. Nurses' assessments revealed that clients who were coached to address concerns directly followed through in 55% of cases and failed to address concerns with providers in 22.5% of cases; in the remaining 22.5% of cases, no documentation existed to show whether or not a client had addressed his or her concerns with the provider (Fig. 2).

Nurses' documentation revealed that their concerns were addressed in 86% of cases in which communication was initiated by phone call, while the concerns were not at all addressed in 14% of these contacts. PCPs' responses to phone calls varied slightly, with some contacts resulting in an immediate response from the PCP or medical assistant and others resulting in a response after the nurse had left a voicemail message. Of the seven phone calls documented,

five were primarily focused on clarifying clients' current medication list. Concerns raised by nurses via letter were fully addressed in 34% of cases, partially addressed in 12% of cases and not at all addressed in 12% of cases; additionally, outcomes were not documented for 41% of cases in which letters were written. Concerns raised by clients through client coaching were fully addressed in 41% of cases and not at all addressed in 32% of cases; outcomes were not recorded for the remaining 27% of client-initiated communications (Fig. 3).

Discussion

Taken together, these data suggest that functionally challenged, low-income, home-dwelling older adults possess a number of health-related concerns identified during home visits that warrant communication with PCPs. While nurses in the home are uniquely positioned to note intrinsic and

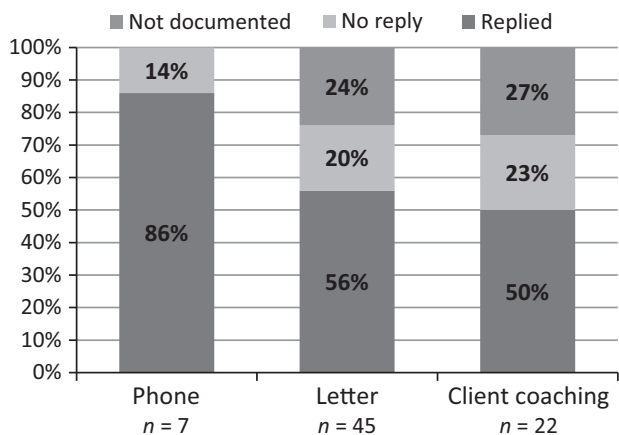


Figure 2 Received Response from primary care providers.

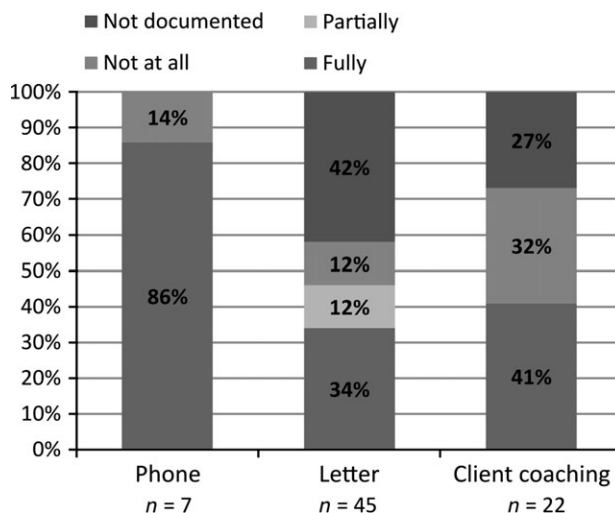


Figure 3 Concern addressed by primary care providers.

environmental issues affecting safety and quality of life, this study has reinforced the understanding that communication from home health care providers often goes unaddressed. Although this study's results may be skewed due to incomplete documentation of PCP responses, a 50% response rate to letters and client coaching supports the understanding that significant efforts must be made to improve PCP responsiveness to nurse communication. One study of PCPs working in an academic medical centre found that 54% rarely read home health care forms before signing them (Fairchild *et al.* 2002). In contrast, a high response rate to this study's small sample of phone calls is encouraging, as it supports the hypothesis that direct phone calls from nurses to PCPs can often effectively address concerns in a timely manner (Crawford *et al.* 2012).

This study's findings and generalisability are limited by its sample, which was gathered from a larger project that was not specifically designed to examine traditional home health care delivery, but rather an innovative model of care. Additionally, because CAPABLE, a bundled intervention, was not exclusively focused on improving communication between providers, thorough documentation of communication between nurses and PCPs may have been limited. Further, some letter outcomes were likely undocumented because several letters written by CAPABLE RNs were sent to PCPs after nurses' third or fourth (final) visit with a client, after which point the study protocol had ended and CAPABLE RNs were no longer able to contact clients.

Further studies should seek to examine the effects of a communication-based home health intervention as a primary outcome, as this may yield a more comprehensive understanding of the effectiveness of a specific intervention. Nevertheless, this study is informative because there is a gap in the literature regarding communication between PCPs and home care providers.

Several interventions have been suggested to streamline communication and improve nurse-provider relationships, including communication-oriented training programs (Brown *et al.* 2010), use of a single tool for structured communication (Crawford *et al.* 2012), and increased incorporation of home health practice into medical and nursing curricula (Harris 1998). Still others have suggested that increased verbal or face-to-face communication will allow for closer coordination of care (Hornbake 2011, Flicek 2012, Jeffs *et al.* 2013). Each of these proposals should play some role in strengthening communication between home health care providers and PCPs, but some communication tools, widely implemented in inpatient systems and described below, seem especially promising.

Telephone calls are a promising means of addressing acute or minor needs, and use of written communication may play a vital role in describing more complex health needs with appropriate detail. Regardless of the vehicle of communication, a structured, evidenced-based method of noting observations and recommendations should be implemented to improve clarity and efficiency of communication. In particular, future research should explore the implementation of SBAR (Situation, Background, Assessment, Recommendation) in educational programs and home health communication as The Joint Commission and the Institute for Healthcare Improvement (IHI) have both endorsed SBAR as a tool for promoting safe, organised, and efficient communication (Labson 2013, Kaiser Permanente of Colorado 2014).

Lastly, this analysis extends prior research which supports the continued expansion of client empowerment through nurse coaching and the use of devices such as health passports. Such expansion may improve outcomes by increasing patient activation, the skills and confidence to become actively engaged in one's care (Hibbard & Greene 2013). Indeed, higher scores on measures of patient activation are associated with lower rates of re-hospitalisation in transitional care (Coleman *et al.* 2004), and highly activated patients are at least two times more likely than those with low activation levels to practice health promotion behaviours such as preparing questions for a visit with a PCP, seeking information about providers and knowing treatment guidelines for a condition (Hibbard & Greene 2013). Further, across varied economic backgrounds, chronically ill patients with high activation levels are more likely to adhere to treatment, perform self-monitoring and obtain regular chronic care (Hibbard & Greene 2013).

Communication through patients does not eliminate a need for direct communication between home health nurses and PCPs; yet nurses in the home are ideally positioned to promote patient engagement through use of tools such as health passports and motivational interviewing. Expansion of these efforts could significantly impact communication between providers and patients. In particular, health care providers working in the home should consider printing hard copies of letters for clients to carry to appointments, as such a strategy may support patient coaching by increasing the likelihood of PCPs acknowledging communication.

Conclusion

This study highlights the importance of timely, effective and structured communication between nurses and PCPs

(practicing within and outside the home) in improving patient outcomes. Many community-dwelling patients suffer from functional limitations, unsafe living conditions and individualised concerns that are under-addressed in acute care and traditional primary care. Nurses practicing within the home setting can continue to improve care coordination by communicating directly with providers, using time-efficient phone calls to address minor matters and considering written letters when more detailed communication is necessary. Additionally, nurses should seek to empower patients to address concerns directly with providers through the use of devices such as health passports. In order to improve the organisation and efficiency of communication, future research should explore the implementation of SBAR (Situation, Background, Assessment and Recommendation) in home health communication to promote safe and efficient communication among providers.

Relevance to clinical practice

This study is widely applicable to clinical practice, as it analyses dynamics of inter-professional communication in an understudied setting. Because health occurs in all settings and not just within the bounds of providers' offices, it is vital that nurses and primary care providers possess knowledge that allows them to communicate patient needs in a clear and efficient manner. As health care delivery continues to move outside of the home, evidence-based practice should inform institutional policies and the actions of individual clinicians. By identifying methods of communication that serve distinct yet equally valuable needs, this study provides a basis for future research and for provision of effective and efficient patient-centred care.

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Disclosure

The authors have confirmed that all authors meet the ICMJE criteria for authorship credit (www.icmje.org/ethical_1author.html), as follows: (1) substantial contributions to conception and design of, or acquisition of data or analysis and interpretation of data; (2) drafting the article or revising it critically for important intellectual content and (3) final approval of the version to be published.

Contributions

Study design: PDS, CB, JB, JR, KLB, JS, MN, SLS; Data collection and analysis: PDS, CB, JB, JR, KLB, JS, MN, SLS; Manuscript preparation: PDS, CB, JB, JR, KLB, JS, MN, SLS.

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