

Academic-Practice Partnership for Caregiver Training and Support: The Duke Elder Family/Caregiver Training (DEFT) Center

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BACKGROUND After a hospital stay, many older adults rely on their caregivers for assistance at home. Empirical evidence demonstrates that caregiver support programs in hospital-to-home transitions are associated with favorable caregiver and patient outcomes. We tested the feasibility of implementing the Duke Elder Family/Caregiver Training (DEFT) program in an academic medical center.

METHODS: We recruited adult caregivers of homebound patients who were aged 55 years or older from Duke University Hospital in Durham, North Carolina. Caregivers attended a face-to-face caregiver training and received two telephone checks after hospital discharge with DEFT services ending at 14 days of hospital discharge. We used a one-item survey to measure overall DEFT satisfaction. We also monitored 30-day readmissions of patients whose caregivers completed the DEFT program.

RESULTS: The DEFT Center received 104 consult orders in six months. Of these, 61 agreed to participate but nine caregivers were unable to schedule the DEFT training and three decided to eventually withdraw from participation. Forty-nine caregivers received the DEFT training, 12 of whom were ineligible to continue because of change in patients' disposition plan. Of the remaining 37 caregivers, 15 completed the full program and reported high satisfaction; one patient was readmitted within 30 days of discharge.

LIMITATIONS: The DEFT implementation was based on academic-medical partnership and relied on electronic medical records for consult and documentation. Replicability and generalizability of findings are limited to settings with similar capabilities and resources.

CONCLUSION: The implementation of a caregiver training and support program in an academic medical center was feasible and was associated with favorable preliminary outcomes.

Following the pattern of age demographic shifts in the United States, the number of older adults in North Carolina will rise dramatically. In 2018, approximately 1.6 million North Carolinians (or about 16% of the state population) were aged 65 years and above, and by 2025, 1 in 5 North Carolinians will comprise this age group [1]. Older adults account for 1 in every 3 hospital discharges in North Carolina [2]. The physiologic consequences and comorbidities of aging place many older adults at high risk for complicated recovery [3-4]. They also frequently experience a decline in physical function as a result of hospitalization that may limit their capacity to independently live at home [5].

Many older adults rely on their family and friends (hereafter, "caregivers") for care and support after their hospital discharge [6-9]. However, many caregivers are ill-prepared for home caregiving, which may lead to preventable uses of health care services and hospital readmissions by patients [10-12]. One in five older adults is readmitted within 30 days of their discharge, and the 30-day readmission rate increases to about 31% for those who are medically vulnerable and frail [13-14].

Evidence suggests that programs that support older patients and their caregivers during the hospital-to-home transition are associated with a reduction in 30-day readmissions, decreased hospital length of stay, and improved satisfaction and quality of life among patients and their care-

givers [15-21]. Providing a training before hospital discharge has also been found to promote confidence and preparedness among caregivers [11, 22-24]. Improvement of caregiver knowledge, skills, and confidence in the care of their loved ones may reduce caregiver burden and stress [25-27].

The American Association of Retired Persons formally acknowledged caregivers as the bedrock for home support when they sponsored the Caregiver Advise, Record, Enable (CARE) Act initiative [28]. Briefly, the CARE Act requires hospitals to record the caregiver's information, share the discharge plans with the caregiver at least 24 hours prior to the discharge date, and provide the caregiver with education and live demonstration/training of medical tasks needed for the patient's home care [29]. The live training sessions are documented in the patient's medical record, indicating, at a minimum, the date, time, and contents of the training. In 2018, 36 states, excluding North Carolina, had passed versions of the CARE Act into law [30-31].

In 2016, the Duke University School of Nursing (DUSON)

Electronically Published January 21, 2020.

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N C Med J. 2020;81(4):221-227. ©2020 by the North Carolina Institute of Medicine and The Duke Endowment. All rights reserved. 0029-2559/2020/81401

received a three-year funding grant from The Duke Endowment to develop and implement the Duke Elder Family/Caregiver Training (DEFT) Center. The DEFT Center is a collaborative endeavor between DUSON and the Duke University Health System (DUHS). Guided by evidence and expertise of the DEFT team, the DEFT Center intends to provide an infrastructure for caregiver training and support for enhanced hospital discharge preparation [16-17, 23-24, 32].

We launched a pilot study of the DEFT program to determine its feasibility in an academic medical center as well as its acceptability by hospital clinicians and caregivers. We also collected data to determine preliminary impact of the program on caregiver and patient outcomes. The feasibility study was intended to provide data for modifications of the program, if needed, before a hospital-wide implementation is launched.

Methods

The DEFT pilot was conducted as a quality improvement program and received an exempt status from the DUHS Institutional Review Board. We used a single caregiver group and a pretest-posttest design to measure caregiver outcomes.

Setting and Participants

Two hospital units at Duke University Hospital (DUH) located in Durham, North Carolina, participated as pilot sites for the DEFT program. Each unit has 32 inpatient beds. In 2015, 9,877 (32.2%) of DUH discharges to home were patients aged 65 years and older.

Caregivers who were aged 18 years or older and expected to assist a family member or friend (patient) aged 55 years or older after hospital discharge to home were eligible to participate in the DEFT program. By virtue of the DEFT team being fluent in English only, we excluded caregivers who cannot speak in English. Also, caregivers of patients receiving hospice care and caregivers whose loved ones were discharged to a facility were not eligible to participate.

Measures

To determine the feasibility of the DEFT workflow process, the number of DEFT consults were tracked every month. Our hypothesis was that consults would increase every month if our workflow was useful for clinicians and not too cumbersome. For feasibility and acceptability of the DEFT program by caregivers, we monitored the number of caregivers who agreed to participate over the number who were referred to DEFT. We requested that caregivers who participated in the training complete a survey about the training session. We also monitored the number of caregivers who fully completed the DEFT program.

To explore the preliminary impact of the DEFT program on caregiver satisfaction, we used a one-item survey (*How satisfied are you with the knowledge and support that you have received thus far for your role as a caregiver?*) using a 1-10

score, with 10 being the highest. We reviewed DUHS medical records of patients whose caregivers participated in the DEFT program for 30-day readmissions.

Procedure

Prior to start of the DEFT feasibility trial, the DEFT team, with heavy input from hospital clinicians and leaders, spent several months developing the DEFT workflow (Figure 1) and training curriculum. A workflow manual was developed by the DEFT program director to catalogue revisions to workflow and curriculum that occurred from multiple deliberations by the DEFT team and clinical partners. The DEFT team sought assistance from the DUHS informatics team to develop items for its caregiver assessment and template for documentation on the DUHS electronic health record system (EPIC). Thereafter, the DEFT team rounded in participating units to describe the program to hospital providers such as physicians, nurse practitioners, physician assistants, nurses, and case managers. The DEFT team demonstrated how to place consults using EPIC. The DEFT team requested that the hospital providers consult DEFT when they identified a caregiver who would care for a patient they were planning to discharge home.

The DEFT consult template contained a menu of topics and selected skills that are relevant for post-hospital home care. We included topics that have been identified in the literature as relevant after hospital discharge, such as medication management, identification of red flags and who to call, follow-up appointments, nutrition and mobility, and prevention of falls. For skills, we selected those that were identified by hospital providers as common needs of their patients such as wound care, tube feeding, subcutaneous shots, and drain care. From this menu, hospital providers selected topics and skills that they believed were relevant for the caregivers to know based on their loved one's medical status.

Upon receipt of the electronic consult order, the DEFT intake specialist reviewed records to determine eligibility of caregivers. If eligible, the intake specialist called the caregiver to describe the DEFT program and to invite participation. If interested in participating, the caregiver was then scheduled for a face-to-face training session. In the pilot, the DEFT team offered a training class four times a week in one of the hospital classrooms.

A DEFT nurse and a DEFT case manager led each training session. A session began with caregivers completing a survey that queried their anticipated needs at home, such as financial resources, work obligations, transportation, support from others, and patient care. A baseline survey on caregiver satisfaction was also completed. Thereafter, interactive discussions on topics identified by hospital providers ensued. The DEFT team implemented several active learning approaches such as case studies with problem-solving discussions, teach-back strategies, and demonstration and return demonstration of skills. Supplies similar to what the hospital used for patient care and procedures

FIGURE 1.
The DEFT Center Workflow From Initial Intake to Post-hospital Discharge



Icons from Freepik.

(such as gastrojejunostomy tubes, syringes, and transparent dressing) were used by the DEFT nurse for skills training to increase familiarity of their use among caregivers. Caregivers had the option to video record skills training sessions using their smartphones. Before each session ended, the DEFT case manager provided information on community services to address anticipated needs at home as identified by the caregivers in the survey that they completed at the beginning of the session. The DEFT trainings were scheduled before a patient was discharged from the hospital. Up to four caregivers could participate in each training session, which lasted for about an hour.

The DEFT team utilized training materials that had been vetted by the DUHS Patient and Family Education Governance Council. Additionally, DEFT used pre-appraised, evidence-based materials available from federal agencies such as the Agency for Healthcare Research and Quality and the Centers for Disease Control and Prevention. Examples of materials used were information on nutrition from <https://www.cdc.gov/nutrition/> and on falls prevention from <https://www.ahrq.gov/topics/falls-prevention.html>.

After the face-to-face training, the DEFT team monitored hospital records for discharge dates of patients of participating caregivers. After hospital discharge, the DEFT team conducted two phone check-ins with caregivers to provide an opportunity to ask questions about home caregiving. These phone calls happened within 3-5 days and 8-10 days of discharge. After each contact with caregivers, the DEFT team documented pertinent information about the patient's recovery shared by the caregiver on the medical record. The DEFT service ended at approximately 14 days of hospital discharge. At this time, caregivers responded again to the one-item satisfaction survey.

Data Analysis

Because of the preliminary nature of the pilot, only descriptive statistics were employed.

Results

The DEFT feasibility study began in April 2017 and ended in September 2017. As seen in Figure 2, in six months of implementation, the DEFT program received 104 consult orders, with the number of unique monthly consults incre-

mentally increasing over time from 7 to 28. The number of caregivers enrolled in the program followed the same trend as consults, from 0 in April to 14 in September.

Of those who were deemed eligible to participate (N = 95), 61 (64.2%) were interested and enrolled in the DEFT program. Because of their busy schedules, nine caregivers were unable to attend our caregiver training class. Three caregivers withdrew from participation after initially agreeing. Of the 49 caregivers who received DEFT training, 12 were deemed ineligible to continue participation because of changes in their patients' disposition. Of the 37 remaining, 15 (41%) completed the full DEFT program (training, two calls, and a discharge call), 15 (41%) had training and at least one phone call, and seven (18%) were lost to follow-up after hospital discharge.

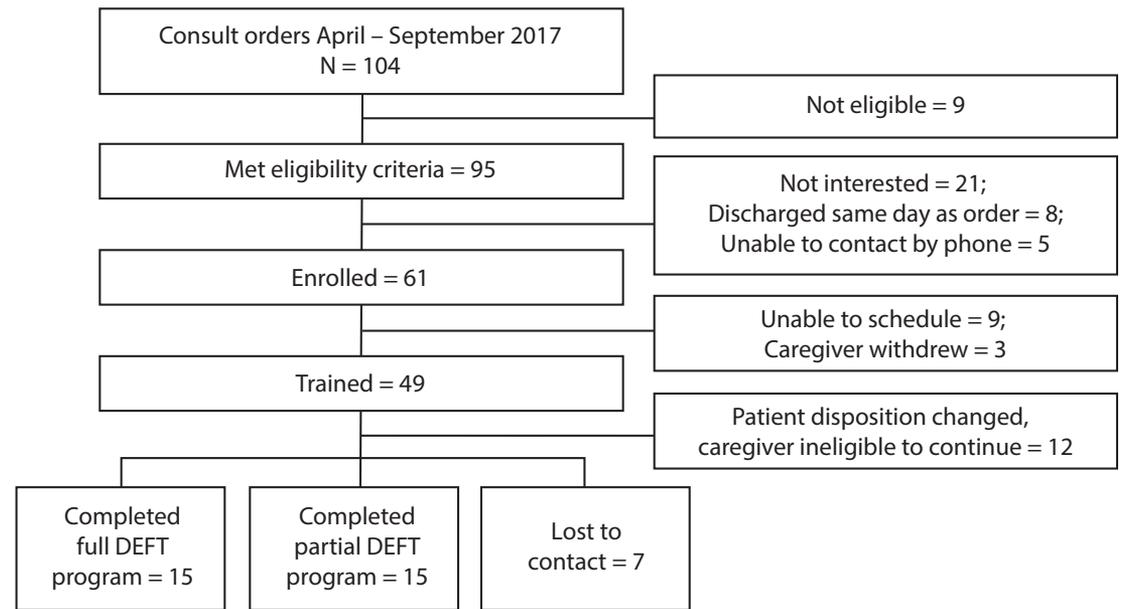
Caregivers rated the caregiver training session very highly (Table 1). The 15 caregivers who completed the full DEFT program rated their satisfaction toward knowledge and support for patient care higher after participating in the DEFT program (8.50 versus 9.45, N = 12). Only one caregiver (6.7%) had a patient who was readmitted within 30 days of hospital discharge.

Discussion

Based on published evidence that caregiver training and support may deliver favorable caregiver and patient outcomes, we developed and pilot-tested the feasibility of the DEFT program in an academic medical center [11, 15-16]. The DEFT team's careful deliberation in designing its workflow to minimize, as much as possible, disruptions to hospital services may have contributed to the initial acceptance of the program by hospital providers. The ability to access medical records via EPIC has also allowed the DEFT team to tailor the training and education based on patients' medical conditions.

Although an academic-practice partnership is touted as a collaborative opportunity in health care, this endeavor is replete with complexities [33, 34]. The operating systems of academic institutions and practice systems are vastly dissimilar. Academic faculty and personnel often lack the operational knowledge about hospital services and work culture. They also have limited top-level participation in hospital decision-making processes. To launch a health-system-wide

FIGURE 2.
Consort Diagram for DEFT Pilot Program



Source: Hendrix et al.

initiative, buy-in from key stakeholders and hospital leadership is crucial. In DEFT's case, the team engaged in many presentations to hospital leadership to disseminate widely how DEFT can provide value-added benefits to the health system. Authorship in national presentations involved clinical partners. DEFT endeavors were deliberately organized with a win-win mindset for DUSON and DUHS.

With any new projects, pilot implementation is an important preliminary step toward identifying and improving inaccurate assumptions and inefficient processes. This preliminary testing will also afford the "outside" team an opportunity to get acculturated with the hospital workflow processes, resources, and environment. This is relevant as any new hospital program will need to align its goals and outcomes with the hospital's strategic priorities. Additionally, hospital leaders are often wary about costs associated with new services, thus sustainability discussions will have to involve program data to showcase an acceptable return on investment. For DEFT, the team intends to perform cost-effectiveness analyses that take into consideration its annual budget versus potential revenues including savings associated with reduction in readmissions (if any).

As a result of this pilot implementation, our team learned several important lessons that need to be addressed before we scale up the program. Of the 104 consult orders we received, the discharge disposition of 16 patients changed from home to skilled nursing facility after the caregivers had already consented to participate in the training. This may suggest that the consult orders were made too early before discharge decisions were finalized. A caveat, however, is that if consult orders were made too late or on the day of dis-

charge, contacting the caregiver and scheduling a face-to-face training would not be possible. Thus, further discussions around optimal timing of placing consult orders are needed.

The first version of the DEFT consult template required the providers to enter caregiver information, including caregiver's contact phone number. However, providers often faced difficulty in obtaining caregiver information as caregivers were frequently not at the bedside during clinical rounds. Many providers stated that more consults could be made if caregiver phone number was optional. As a response, we modified this requirement and opted to use next-of-kin information on the medical record as an avenue for obtaining caregiver contact information.

During the first three months of our pilot study, we presented our program to various groups of medical learners (i.e., interns, residents, fellows) only to discover that these learners were only in the unit for a short time because of the nature of their clinical rotation. To reduce workload associated with repeated presentations, we decided to focus our efforts on medical directors, staff nurses, and case managers who were permanently assigned to a unit. We then requested that these permanent providers share the DEFT information with their respective learners.

In the preliminary study, the DEFT team contacted each caregiver by phone immediately upon receipt of the consult order. In addition to describing the DEFT program and scheduling a training session if a caregiver was interested in participating, the caregiver survey was also completed by phone. However, this proved to be quite taxing for caregivers, as it often took about 15-20 minutes to complete the assessment. Additionally, because the protocol required a

completed survey before a caregiver could participate in the training, an incomplete caregiver survey meant no scheduled training for the caregiver. To address this issue, the DEFT team reconfigured the mode of assessment to a paper survey, which was to be completed during the in-person training. Caregivers acknowledged that completing written questionnaires and surveys in person was easier and quicker than being asked to respond to each item over the phone.

In the early phase of the pilot, the DEFT trainers mostly led the discussions in training sessions. However, this tactic often resulted in passive learning with caregivers doing more listening than talking. Therefore, the DEFT trainers revised their teaching approach to follow a more conversational flow with the dictum of “less is more” and an emphasis toward practical strategies. For instance, instead of going over risk factors for falls, a photo of a cluttered room was presented. Caregivers were asked to identify items in the photo that could contribute to falls. Each caregiver was also asked to reflect and describe the layout of furniture in the patient’s bedroom at home and share one to two strategies for

improving it. This conversational approach allowed the DEFT team to tailor information based on the caregiver’s baseline knowledge and input. Lastly, the training site was originally scheduled at the DUSON, a 15-minute walk from DUH, where state-of-the-art technology such as mannequins and simulations can be used. However, an overwhelming majority of caregivers were reluctant to leave the hospital and opted to have the training in a hospital classroom to stay close to their loved ones.

There were several limitations to our feasibility program. The DEFT program is based on an existing academic-practice partnership. Many hospitals, especially those located in rural areas, do not have academic affiliations. Thus, the DEFT workflow may not be feasible in these hospitals. Additionally, the DEFT workflow process relies on the use of an electronic medical record. Therefore, the communication pathways established by the DEFT team using the EMR are limited to hospitals with the same capability. Lastly, the two pilot units were selected based on existing collaborating relationships between the DEFT center director and physician leads of the

TABLE 1.
Caregiver Satisfaction with the DEFT Training (N=40)^a

	N-size	Percentage
Overall, how well did the class meet your expectations? ^b		
Extremely Well	30	75.0
Very Well	9	22.5
Missing	1	2.5
The time of the class fit with my schedule. ^c		
Strongly Agree	26	65.0
Agree	14	35.0
The day of the class fit with my schedule. ^c		
Strongly Agree	28	70.0
Agree	12	30.0
The training I received today will help me as a caregiver. ^c		
Strongly Agree	32	80.0
Agree	8	20.0
The training lasted the right amount of time. ^c		
Strongly Agree	28	70.0
Agree	11	27.5
Neither Agree Nor Disagree	1	2.5
The DEFT staff were helpful and answered my questions. ^c		
Strongly Agree	35	87.5
Agree	5	12.5
I felt that the training format supported sharing and participation. ^c		
Strongly Agree	32	80.0
Agree	8	20.0
The location of the DEFT training was convenient for me. ^c		
Strongly Agree	32	80.0
Agree	8	20.0

^aThese were caregivers who completed a DEFT Training Class.

^bPossible responses included: not well at all, not so well, somewhat well, very well, and extremely well

^cPossible responses included: strongly disagree, disagree, neither agree nor disagree, agree, and strongly agree

two units. Other units where no previous collaboration has been established may not be as receptive to DEFT.

In summary, our pilot study demonstrated that implementing a caregiver training and support program in an academic medical center is feasible and has the potential to produce favorable caregiver and patient outcomes. Findings from the pilot study have given us directions on how to improve our existing processes before we plan for a wider-scale implementation. *NCMJ*

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Acknowledgements

Financial support. The Duke Endowment.

Potential conflicts of interest. The authors report no relevant conflicts of interest.

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