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ORIGINAL RESEARCH

Impact of a Visual Algorithm Tool on Discharge Planning Among Medicine Housestaff

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Introduction

Discharge planning is a crucial part of providing high-quality care. When done well, it is associated with improved outcomes including reduced hospital readmission rates.[1] An effective discharge plan requires early identification of patients' post-acute care needs as well as potential barriers to placement. More than half of all hospitalizations in the United States occur at teaching hospitals.[2] Despite housestaff physicians' desire to receive more structured guidance on how to provide high-quality discharge care, most receive little formal training on discharge planning and are instead expected to learn "on-the-go".[3-4] One approach to providing this guidance is via decision-support tools. When used for discharge planning they have been associated with improved outcomes.[5] Most attempts at teaching transitions of care to trainees, have been didactics-oriented.[6] Very little is known about the impact decision-making tools, such as a visual algorithm, could have on housestaff education about this important topic.

The West Los Angeles Veterans Affairs (WLAVA) Medical Center, a large urban training site, has many disposition options that are not available at our other affiliated training sites. Acceptance criteria for these myriad options are not intuitive and can be overwhelming. In our experience, housestaff often express confusion about these options, which can lead to decreased provider satisfaction and delayed or inappropriate referral placement. One particularly confusing option at WLAVA is the Transitional Care Unit (TCU). The TCU accepts patients who have subacute care needs but do not qualify for other disposition options. Hospitalist screeners for the TCU have frequently noted inappropriately placed referrals. For quality improvement (QI) purposes, we developed a visual algorithm tool that outlined appropriate decision-making for post-acute disposition of patients at WLAVA. We hypothesized this decision-support tool could 1) improve housestaff satisfaction and decrease confusion with discharge planning at WLAVA and 2) increase the proportion of appropriate TCU referrals.

Methods

We developed a visual algorithm tool (Figure 1) that outlined acceptance criteria for WLAVA's many post-acute care options. The algorithm's purpose was to guide housestaff in a stepwise fashion to determine the most appropriate disposition option for their patients. Our target audience was housestaff rotating through the 5 inpatient medicine teams at WLAVA. This project occurred over 7 weeks from May to June 2018. Due to time and staffing constraints, we were only able to roll out the algorithm to 2 out of the 5 teams, which we termed the "education" group. We also gave the "education" group a glossary of common disposition-related terms (Supplemental Fig. 1) and instructed them on how to use the algorithm. The other 3 teams, which we termed the "non-education" group, performed their clinical duties as usual. Housestaff from both groups were surveyed at the start and end of their rotations. This survey (Supplemental Fig. 2) consisted of 8 questions. It assessed knowledge, comfort level, and satisfaction related to disposition at WLAVA. We compared responses between the "education" and "non-education" groups to assess the impact of our algorithm tool. We retrospectively reviewed all TCU referrals received during the project period for appropriateness, based on whether or not the referral was accepted by the screening hospitalist at that time. This project was reviewed by our Institutional Review Board who determined it to meet quality improvement criteria.

Statistical Analysis

Survey responses were summarized using frequencies and percentages for categorical variables. After collapsing the responses into "education" and "non-education" groups, chi-square test or Fisher's exact test were used to determine if there were any differences in survey responses within each group at the start of the rotation compared to the end, and between the two groups at the end of their rotations. Comparison of TCU acceptance rates between the different groups was assessed using the chi-square test. Statistical analyses were conducted in SAS Version 9.4. P-values <0.05 were considered statistically significant.

Results

There were 34 respondents in the "education" group, 17 at the start of the rotation; 17 at the end) and 52 respondents in the "non-education" group 28 at the start; 24 at the end. By the end of their rotations, housestaff from both "education" and "non-

education" groups showed an increased comfort level with most disposition-related survey items (Table 1). Only housestaff from the "education" group expressed increased understanding about the concept of custodial placement and the indication for conservatorship. Only the "non-education" group expressed greater understanding of when Medi-Cal (California's version of Medicaid) was necessary for placement. All respondents (17/17) in the "education" group found the algorithm tool to be helpful. There was no significant difference in comfort level or satisfaction with discharge planning between the 2 groups at the end of their rotations. There was a higher acceptance rate of TCU consults placed by the "education" group compared to the "non-education" group (13/16 vs 8/19, p=0.019).

Discussion

Effective discharge planning requires a firm grasp of the post-acute care resources available in a particular healthcare system. Without this understanding, clinicians cannot properly advocate for their patients during this vulnerable transition period. It is never too early to start mastering this skill, and in fact, the Accreditation Council for Graduate Medical Education (ACGME) has designated "systems-based practice" to be one of the 6 core competencies for residents. Despite this emphasis by the ACGME, many residency programs still lack formal training on discharge planning.[7] It is then no surprise that housestaff often feel unprepared with specific aspects of discharge education and lack sufficient knowledge about the services that post-acute care settings can provide.[8-9]

Our visual algorithm tool was considered helpful by housestaff at WLAVA in their discharge planning. Its use was also associated with a higher percentage of appropriate referrals to one of our hospital's subacute care services. The algorithm's lack of impact on comfort level and satisfaction with disposition may be explained by the QI project occurring at the end of the academic year, when housestaff are generally more comfortable with discharge planning processes. Based on the positive feedback we received from housestaff on this algorithm, we have since rolled it out to all inpatient medicine teams along with integrating it into lectures at our training site to increase formalized teaching on transitions of care. In the future, we hope to continue incorporating this decision-making tool into other parts of our current workflow, including our inter-disciplinary discharge rounds, so that we can receive feedback from other important team members like social work and case management.

Discharge planning is an important skill that is undertaught in the formal curriculum of residencies. In our QI project, we found that implementing a standardized visual decision-making tool helped increase housestaff education in this crucial area of patient care. The initial feedback we received about our algorithm was encouraging and we hope to continue implementing it in future related QI work.

Acknowledgements

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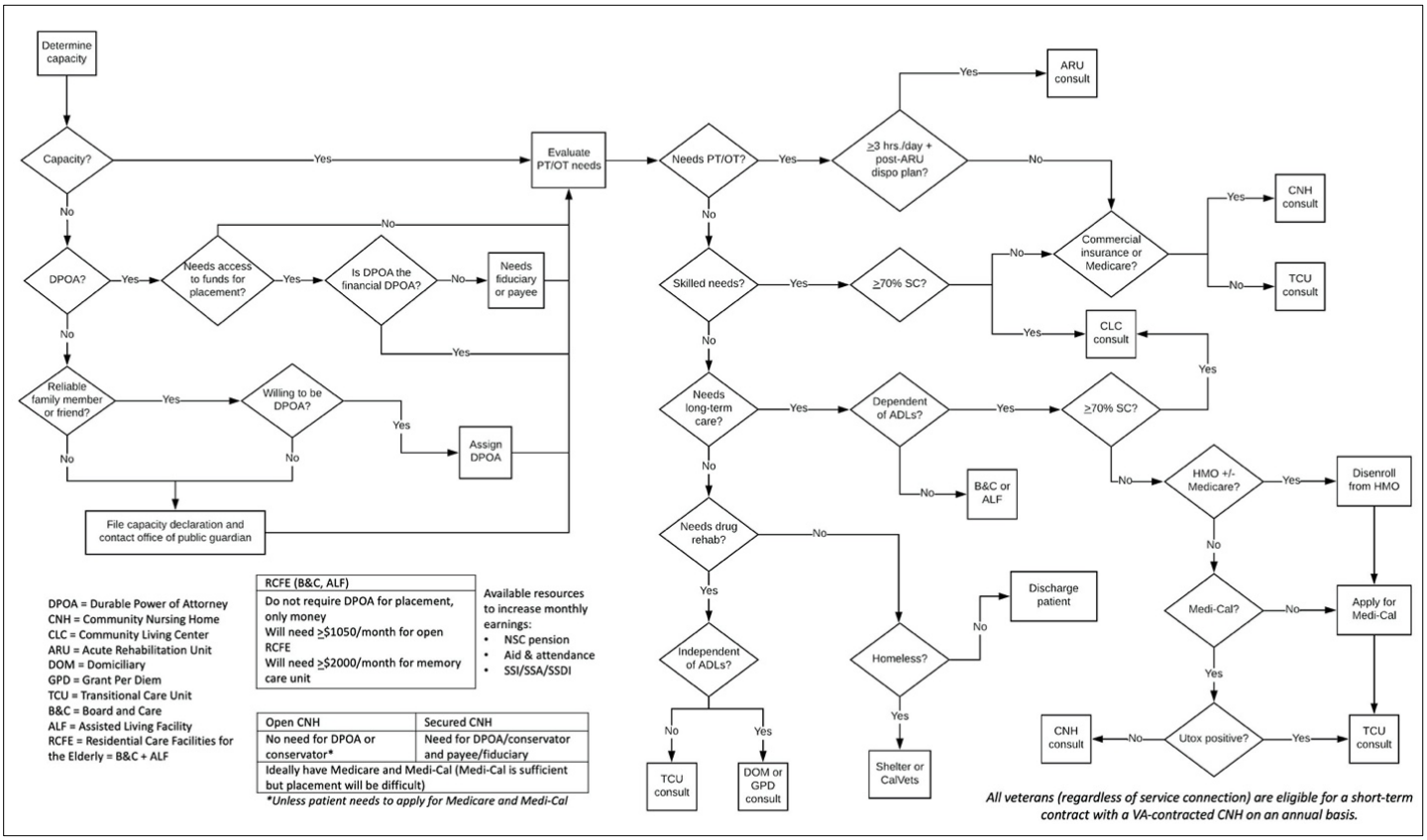

Figure 1: Visual algorithm tool developed by the authors to assist housestaff with discharge planning. It provides question prompts and describes recommend steps clinicians at our institution should take to determine the most appropriate disposition option for their patient. In the bottom left-hand corner, we provided 1) a glossary of commonly encountered acronyms and 2) a brief description of some common discharge locations such as assisted living facilities and community nursing homes

Discharge Planning Survey Responses						
	Education Group			Non-Education Group		
Question / Response	Start of Rotation	End of Rotation	P Value	Start of Rotation	End of Rotation	P Value
I understand the difference between the disposition options at WLAVA						
Disagree	12 (70.6%)	1 (5.9%)	0.0001*	13 (46.4%)	3 (12.5%)	0.0146*
Agree/Neutral	5 (29.4%)	16 (94.1%)		15 (53.6%)	21 (87.5%)	
I know what consult to place for the post-acute disposition of my patient at WLAVA						
Disagree	10 (58.8%)	0 (0.0%)	0.0001*	10 (35.7%)	2 (8.3%)	0.0241*
Agree/Neutral	7 (41.2%)	17 (100.0%)		18 (64.3%)	22 (91.7%)	
I know when to place a TCU consult						
Disagree	6 (35.3%)	1 (5.9%)	0.0339*	12 (42.9%)	3 (12.5%)	0.0298*
Agree/Neutral	11 (64.7%)	16 (94.1%)		16 (57.1%)	21 (87.5%)	
I am familiar with the insurance or service connection requirements for the different post-acute care options at WLAVA						
Disagree	15 (88.2%)	4 (23.5%)	0.0003*	20 (71.4%)	5 (20.8%)	0.0003*
Agree/Neutral	2 (11.8%)	13 (76.5%)		8 (28.6%)	19 (79.2%)	
I understand the difference between skilled and custodial placement						
Disagree	7 (41.2%)	1 (5.9%)	0.0152*	7 (25.0%)	2 (8.3%)	0.1524
Agree/Neutral	10 (58.8%)	16 (94.1%)		21 (75.0%)	22 (91.7%)	
I understand which patients require a DPOA or conservator for placement						
Disagree	8 (47.1%)	0 (0.0%)	0.0026*	4 (15.4%)	2 (8.3%)	0.6688
Agree/Neutral	9 (52.9%)	17 (100.0%)		22 (84.6%)	22 (91.7%)	
I understand which patients require Medi-Cal for placement						
Disagree	12 (70.6%)	8 (47.1%)	0.296	20 (74.1%)	7 (29.2%)	0.0013*
Agree/Neutral	5 (29.4%)	9 (52.9%)		7 (25.9%)	17 (70.8%)	
What is your current level of satisfaction with discharge planning at WLAVA?						
Unsatisfied/Very Unsatisfied	9 (52.9%)	4 (23.5%)	0.0776	9 (33.3%)	6 (25.0%)	0.5144
Very Satisfied/Satisfied/Neutral	8 (47.1%)	13 (76.5%)		18 (66.7%)	18 (75.0%)	

*p-value <0.05

Table 1
Comparison of Survey Responses Between Education and Non-Education Groups

Common Disposition Terms

HMO (Health Maintenance Organization)	Managed care health insurance plan that usually limits coverage to care from hospitals or doctors who are "in network" or contract with the HMO
Medi-Cal	Federal-state joint program to help patients pay for medical care. This is California's version of Medicaid Low-income people 19-64 yo with income at or below 138% of Federal Poverty Level After application is filed, typically takes 2 weeks to receive your "Medi-Cal number." Facilities will not accept referrals unless they have this number Pays for long-term/custodial care at skilled nursing facilities
Medicare	Federally-funded health insurance for anyone 65 and older. Part A (Hospital Insurance) and Part B (Medi-Cal Insurance) Patients under 65 can still be eligible if they are eligible for disability benefits through Social Security Pays for CNH/SNF stay if • Patient has been inpatient status (i.e. not "observation status") for 3 consecutive midnights • Patient has a skilled need (IV antibiotics, daily complex wound care, PT/OT) • They still have Medicare days. Medicare Part A allows for 100 days. Pays 100% for first 20 days and 80% for days 21-100 with patient/family or Medi-Cal responsible for the additional 20%. From day 101 onward, patient/family pays full cost if patient does not have Medi-Cal This 100-day clock resets if there is a 60-day period during which the patient doesn't receive care in a hospital or CNH/SNF Does not pay for long-term care/custodial stays
Social Security Benefits	Federal benefits that patients can receive Retirement Version: • You qualify by working and paying social security taxes to earn "credits" • You need to work for at least 10 years Disability Version: • You qualify by working and paying social security taxes to earn "credits" • You need to work for at least 10 years • You meet their version of disability
A&A (Aid & Attendance)	Provides an increase in the monthly VA pension for veterans who require the aid and attendance of another person. A&A may be applied for if the veteran meets one of the following conditions • Requires the aid of another person in order to perform personal functions required in everyday living, such as bathing, feeding, dressing, attending to the wants of nature, adjusting prosthetic devices, or protecting yourself from the hazards of your daily environment • Bedridden, in that the disability or disabilities requires that the patient remains in bed apart from any prescribed course of convalescence or treatment • Patient in a nursing home due to mental or physical incapacity • Eyesight is limited to a corrected 5/200 visual acuity or less in both eyes; or concentric contraction of the visual field to 5 degrees or less
Skilled Needs	IV antibiotics, daily complex wound care, PT/OT, first-time tube feeds comprising > 50% of daily nutritional need
DPOA (Durable Power of Attorney)	A person selected by the patient to make healthcare decisions on their behalf if the patient is deemed by the medical team to lack capacity Located in the Advance Directive (AD) which is a legal document Patient with capacity may create or rescind an AD at any time Patient who lacks medical decision making capacity may still retain capacity to name a DPOA. Please see section on OPG if patient CANNOT reliably assign a DPOA
OPG (Office of Public Guardian)	If a patient who lacks capacity and has no family or friends who are willing to make decisions on behalf of said patient, probate conservatorship can be applied for through the OPG. OPG will appoint a conservator to assist in decision-making. A Capacity Declaration - Conservatorship form must be completed and entire process can take months to complete
Fiduciary	A qualified individual that is appointed by the Department of Veterans Affairs to manage the patient's VA benefits Primary team must determine that the veteran is incapable of managing his/her VA monetary benefits in a wise and prudent manner due to an underlying diagnosis (i.e. dementia, cognitive impairment, etc)
Payee	Similar to a fiduciary, however appointed by the St. Joseph Center Veteran's Representative Payee program to manage the patient's non-VA benefits (i.e. social security benefits) As above the primary team must determine that the veteran is incapable of managing his/her non-VA monetary benefits
ARU (Acute Rehab Unit)	Located on 2E AD and provides patients with short term acute rehab PM&R (Physical Medicine & Rehabilitation) physicians are the primary team Patient must be able to participate in PT/OT for >3hrs/day Patient must be evaluated and accepted by the PM&R resident for transfer to ARU
CNH (Community Nursing Home)	Same as a Skilled Nursing Facility (SNF). Facility in the community where patients can go for short-term skilled needs or long term-custodial stays Locked CNH facilities require that the patient have a DPOA or conservator, whereas a wanderguard CNH does not require a DPOA or conservator Medicare does not pay for custodial placement. Patient/family will need to either pay out of pocket or apply for Medi-Cal Will not accept patients in restraints or patients requiring a sitter Patients who are young, registered sex offenders, have active substance abuse, bariatric (>300 lbs), behavioral issues, only have Medi-Cal insurance and/or homeless are generally more difficult to place
CLC (Community Living Center – "Home of Heroes")	Same as CNH but located on the VA campus. To qualify for long-term custodial placement, must have one of the following: • ≥ 70% Service Connected • ≥ 60% Service connected + unemployability (the veteran must apply for unemployability) Limited PT/OT beds available Must be evaluated and accepted by CLC staff for transfer
CLC Short Stay	Post-acute transitional unit located on the second floor of the hospital for patients who • Have a primary transitional need (i.e. IV abx, XRT, complex wound care, PT/OT) that are not eligible for all other placement options (i.e CNH, CLC, ARU) • Are awaiting Medi-Cal, Medicare, OPG/conservatorship, fiduciary applications to be processed (AFTER the general medicine team has applied for them) These patients need to have a planned disposition AFTER they are done with their stay at CLC Short Stay Patient must be medically stable as nursing ratio is the same as a CNH and the patients are not rounded on over the weekend No daily labs, no IV pain medications, no IV diuretics, no heparin gtt Must be evaluated and accepted for transfer by the CLC Short Stay attending
CLC Dementia Care	Post-acute locked transitional unit located for patients who have severe cognitive impairment and are at high risk for elopement who require custodial/long-term placement in a locked CNH, locked board and care or wander-guard facility If patient does not have a DPOA and is unable to assign one, the primary team must submit capacity declaration paperwork prior to transfer Must be evaluated and accepted for transfer by the CLC Dementia Care attending
RCFE (Residential Care Facilities for the Elderly)	Also referred to as B&C (Board and Care) or ALF (Assisted-Living Facility) These are non-medical facilities for patients who require some assistance with ADLs (dressing, bathing, toileting, feeding, medication management/administration), but do not require nursing home level of care Patient will need at least $1050/month for an open RCFE Patient will need at least $2000/month for a locked or memory care RCFE Patient must be able to independently transfer from bed to wheelchair and vice versa Requires 90 days sobriety Requires TB clearance Will not accept patients with decubitus ulcers, G-tubes, Foley catheters, suprapubic catheters
CalVet	For veterans 55 or above Age requirement waved for disabled or homeless veterans who need long-term care Housing option that offers B&C level, CNH level and memory care unit level of care Staffed with RNs and CNAs Must apply, usually very long waitlist (often at least 1 year) and not an immediate disposition option Does not require that the veteran be service connected Will not accept registered sex offenders or patients with severe behavioral issues
VASH (Veterans Affairs Supportive Housing)	Subsidized housing (VA Section 8 program) This is an outpatient program that the veteran must apply for Not an immediate disposition option Patient needs to be fully independent in ADLs Contact social work if patient is interested
DOM (Domiciliary)	Substance abuse treatment program and transitional housing located on the VA campus Patient must be independent with their ADLs including medication management Must have a Suicide Risk Assessment Must have TB clearance
GPD (Grant and Per Diem)	Substance abuse treatment program similar to the DOM, however not located on the VA campus Requirements same as DOM Social worker must make referral
HUGS	Inpatient hospice located at the Sepulveda VA Prognosis of <6 months Consult Palliative Care team to determine patient eligibility
SC (Service Connection)	Determined by VA Benefits, which is separate from the VA hospital, and based upon Illness, ailment or disability directly related to the veteran's military service or diagnosed during the time of their service. The higher the % service connection, the more money received

Supplemental Figure 1: Glossary of commonly encountered terms relating to transitions of care at WLAVA. Provided to housestaff along with the visual algorithm tool.

End of Rotation

Please indicate your level of training:
[ ] PGY 1
[ ] PGY 2
[ ] PGY 3
[ ] PGY 4
[ ] Other

Please indicate your specialty:
[ ] Internal Medicine
[ ] Anesthesiology
[ ] Psychiatry
[ ] Other

I understand the difference between all of the different post-acute disposition options available at the WLA VA (i.e., ARU, CNH, CLC, TCU, B&C, ALF, DOM, GPD, etc.)
[ ] Agree
[ ] Neutral
[ ] Disagree

I know what consult to place for the appropriate post-acute disposition of the WLA VA patient
[ ] Agree
[ ] Neutral
[ ] Disagree

I know when to place a TCU consult
[ ] Agree
[ ] Neutral
[ ] Disagree

I am familiar with the insurance and or service connection requirements for the different post-acute disposition options available for my WLA VA patient
[ ] Agree
[ ] Neutral
[ ] Disagree

I understand the difference between skilled and custodial placement
[ ] Agree
[ ] Neutral
[ ] Disagree

I understand which patients require a DPOA or conservator for placement
[ ] Agree
[ ] Neutral
[ ] Disagree

I understand which patients need to apply for MediCal for placement
[ ] Agree
[ ] Neutral
[ ] Disagree

What is your current level of satisfaction with post-acute disposition of patients at the WLA VA
[ ] Very satisfied
[ ] Satisfied
[ ] Neutral
[ ] Unsatisfied
[ ] Very unsatisfied

Did you find the Disposition Algorithm a helpful tool for the post-acute disposition of your WLA VA patients?
[ ] Yes
[ ] No

Supplemental Figure 2: Survey provided to housestaff rotating on one of WLAVA's inpatient medicine services. There were two versions of this survey, one provided at the start of a housestaff physician's rotation, one provided at the end of the rotation.

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