University of Hawai'i at Mānoa
Healthy Hawai'i Evaluation Team
Office of Public Health Studies

Coverdell Strategy C6 Supplemental Brief

Strategy C6: Develop and implement patient care practices/patient care protocols within EMS and hospital systems to coordinate patient hand-off and transitions in care throughout the stroke systems of care.

Background: Hawai'i Department of Health (DOH) State Trauma Coordinator provided a list of potential stakeholders. Healthy Hawai'i Evaluation Team (HHET) conducted interviews between June 22 - July 12, 2022. The focus of the interviews was to capture information about the Year 1 implementation efforts of Strategy C6 for CDC reporting. DOH requested that HHET ask an additional question to support the C6 strategy: *What do you expect DOH to accomplish through this funding to advance stroke care?* HHET independently asked another question relevant to planning and implementing C6 activities: *Could you describe your organization's level of preparedness and timeline for adopting a formalized protocol?* The focus of the second question is to capture the stakeholders' (existing and potential partners') articulation of their capacity to implement formalized protocols, including administrative and operational abilities and constraints. Responses are summarized below and organized according to implementing partners (internal and external), and those that have and have not heard of the Coverdell Grant. This is to highlight variations in operational contexts and to retain nuanced implementation factors. Not all respondents answered all the questions asked.

> *"It's [patient handoffs and transitions to care between EMS and hospitals] a little bit different for every hospital and the handoffs are a little bit different at every hospital. There are certain hospitals that are stroke ready or stroke capable centers and other hospitals."*

Participants: HHET contacted 13 individuals, eight agreed to participate, and five either declined or DOH and HHET mutually determined to be out of the interview's scope if the stakeholders did not respond to multiple interview invitations and/or expressed that they did not know about the Coverdell Grant. Participants were from three O'ahu hospitals, one O'ahu EMS state government entity, one Maui hospital, one Moloka'i hospital, and one Hawai'i Island hospital. Participants held various positions in their organizations from leadership roles to stroke coordinators.

What do you expect DOH to accomplish through this funding to advance stroke care?	
O'ahu EMS state government entity (internal implementing partner)	• Start looking at telemedicine and the spectrum of care in pre-hospital settings, then expanding it statewide. • Develop protocols that reduce emergency hypertension in the field. Currently, paramedics don't carry any medication that they can give patients to reduce hypertensive crises. Medications that paramedics do or do not carry that can be administered to assist with hypertension should be explored. However, carrying thrombolytics in the pre-hospital setting is not preferred at this time. *"It's very aggressive and would put a lot of pressure on the paramedics. If a negative outcome happens, paramedics would carry that with them, whether that's their fault or they were just following protocols."* • There is a need to reduce large vessel occlusion (LVO) bypass* false positives. Currently, false positive LVO patients in the North Shore of O'ahu are being transported to a hospital in downtown O'ahu which takes an ambulance 45 min. outside of their zone.
Urban O'ahu hospital (external implementing partner)	• There is an opportunity to get data that would help inform best practices because O'ahu is essentially a closed system. For example, many patients who require thrombectomies end up at the only comprehensive stroke center in the state, an urban O'ahu hospital, their data can be captured in this system from pre-hospital through to discharge. • Invest in true interoperability and database integration. Spend money on integrating platforms instead of personnel to manually abstract data and transfer it into a third database. Have a unique identifier that crosses databases that allows for automated data abstraction, capturing patient data from the 911 call to post-discharge.
Organizations that have	• Conduct more activities that cater to neighbor island contexts. A lot of things are O'ahu-centric. • Create a system to give EMS feedback on positive patient outcomes that resulted from time-

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heard of Coverdell	saving pre-hospital protocols. • Fulfill the roles and responsibilities as outlined in the grant. • Have stroke social workers out in the community to help patients navigate the healthcare system after their stroke recovery—whether it's rehab, referrals, labs or medications. People don't know where to turn. • Provide in-depth education on diabetes and hypertension management and behavioral risk factors for stroke. These are two great concerns and patients lack understanding of the risks associated with certain behaviors. • Address cultural factors. Among some Pacific-Islander communities, seeing a doctor is a stigma. Other challenges may include lack of health insurance and drug abuse.
Organizations that have not heard of Coverdell	• For less populated islands, educating the public on stroke prevention would be helpful. • New protocols will have to depend on assessments of the data for the diversion protocol.* The study in Hawai'i was not randomized and will trigger closer examination and comparison with national studies that were randomized trials.

* In 2020, EMS updated their transportation guidelines for O'ahu to divert acute stroke patients directly to Throbectomy-Capable Stroke Centers or Stroke Ready Hospitals, dependent on the Los Angeles Pre-hospital Stroke Scale (LAPSS) and C-STAT test results.

Could you describe your organization's level of preparedness and timeline for adopting a formalized protocol?	
O'ahu EMS state government entity (internal implementing partner)	*Organization's capacity to implement a formalized process, as demonstrated through knowledge of the grant, the entity's operations, and established relationships:* • EMS entity has positive collaborations with an O'ahu Coverdell grant implementing hospital and has a telemedicine project that started implementation in Aug. 2022. *Factors that may affect implementation timeline:* • Any formal partnership between EMS and external entities will require vetting from the legal department, to determine needs for contracts and to execute any legal partnerships. • Execution time can take anywhere from two months to two years, depending on the proposed scope of the work, and its potential impacts on working conditions for EMS employees. If the paramedic's union is involved, it will take an additional six months to a year of vetting before any agreements can be signed. • To facilitate the administrative components, the union can be consulted early to determine if there are any changes in working conditions. It is possible to go through the process promptly, about four or five months, but there are projects that have taken. • If protocols are under medical directives or procedures, it can be actuated without union consultation. If the activities involve EMS policies, the union will have to be consulted.
Urban O'ahu Hospital (external implementing partner)	*Organization's capacity to implement a formalized process, as demonstrated through knowledge of the grant, the entity's operations, and established relationships:* • "*As far as therapeutics go, protocols get re-evaluated every year, but it's not as earth shaking as the LVO diversion.*" • This hospital is as prepared as any major academic medical center in the country: give tPA (tissue plasminogen activator) in 15 minutes, have 24/7 interventional neuroradiologists to pull clots out, and transfer patients from the Big Island to perform procedures. • Hospital employees actively participate in HSC and have executive functions, helping design protocols and care pathways. • Hospital personnel responsible for implementing the Coverdell project have roles in creating order sets, creating guidelines, and working on quality improvement projects to improve stroke outcomes. *Factors that may affect implementation timeline:* • *"[This hospital] is like the state of Hawai'i, very bureaucratic, lots to improve on."* • Additional implementation time may be required to examine the data and ensure that every diversion case is necessary. Results after one year of applying the bypass rules yielded

	approximately 50% false positive rate. Essentially, half of the time, the ambulance was unnecessarily taken out of its zone, removing its service for the area. • Next steps will also depend on the outcomes of this hospital's telehealth pilot. A project that uses a secure pre-hospital communication tool—to enable communications that include video and audio feeds with the patient and the paramedic—and is expected to mitigate the over-diversion issue.
Organizations that have heard of Coverdell	*Organization's capacity to implement a formalized process, as demonstrated through knowledge of the grant, the entity's operations, and established relationships:* • Interviewee's organization has a stroke operation's process in place. There is an interventional cardiology program, but only one outpatient neurologist who does not see in-patients very often. • Implementation starts with the stroke operations committee, a working group, to get feedback and agreement on adopting proposed activities. The group meets monthly with members from different disciplines: pharmacy, the director of nursing, and different managers from different nursing units. The process continues through a progression of leaderships: neurosciences committee, the chief medical officer, and the neuroscience chairperson. • For activities involving policy change, the process continues further through vetting by the clinical practice committee, then on to different committees on the board. "*Nothing gets done without a lot of thought. Years later down the road, it'll get passed.*" *Factors that may affect implementation timeline:* • If it is something for the Joint Commission it could be done in one month, but to be done well, it will require at least three months. • A recent operationalized stroke narrator took approximately six months because it involved building the electronic medical record and getting all the buy-ins, then developing the knowledge. *"The education and the training are the hardest parts because until everyone has been trained on it, implementation cannot start."* • The length of time to operationalize a protocol also depends on if it is department-wide or hospital-wide. • There are limited personnel—sometimes a department of one—which will diminish opportunities to operate optimally.
	Organization's capacity to implement a formalized process, as demonstrated through knowledge of the grant, the entity's operations, and established relationships: • Interviewee is aware that positions are being created with the Coverdell funds and are actively being recruited, to maximize the concurrent data analysis, instead of the post hoc analysis—limiting. Coverdell funds are expected to improve the care delivery as well as increase the concurrency of data assessments. • Interviewee's organization actively participates in the HSC and has executive functions in the Coalition. • The organization is ready, at any point, to adopt and respond appropriately to any protocol change, with the understanding that a lot of the new changes, in practice, are driven by information aimed at improving care at both primary and comprehensive centers. *Factors that may affect implementation timeline:* • New protocols, such as the LVO diversion, have a significant effect on a provider's business and will require a lot of concerted lobbying. HSC members are willing to make business sacrifices for what's best for stroke patients, but lobbying for changes that have operational impacts will require effort/time. (A tangential effect from decreases in patient volume at a stroke center is its allocation of resources to stroke. A significant, or anticipating a significant, drop in care volume will, in turn, impact resource allocations.)
	Organization's capacity to implement a formalized process, as demonstrated through knowledge of the grant, the entity's operations, and established relationships: • Interviewee has gathered from an HSC meeting that a new stroke director was hired for the Coverdell project, to help with streamlining processes throughout the state.

	• Interviewee is not anticipating any changes to care protocol in the near future, but the organization usually adopts protocols and best practices approved by the HSC. • The organization has implemented a telestroke program this past year. • Implementation of a new protocol starts with vetting by the institution's stroke committee, then the emergency division, internal medicine, and the quality committee. The committees meet quarterly, however, the committee chairs can also approve if a decision is needed promptly. The case needs to be made that it's a good process for the hospital. *Factors that may affect implementation timeline:* • New protocols that are approved by the HSC can be adopted in three to six months.
Organizations that have not heard of Coverdell	*Organization's capacity to implement a formalized process, as demonstrated through knowledge of the entity's operations, and established relationships:* • Interviewee's organization participates in the HSC, but is not aware of any protocol between EMS and the hospital for stroke; there's no written protocol. • Interviewee's knowledge about Coverdell is through his interview with HHET. • This organization usually does not receive information about stroke care outcomes from the state system. Once the organization provides a thrombolytic or a tPA (or TNK), there is no follow up data.

Considerations

- Not all interviewees were aware of the Coverdell Grant. Their lack of knowledge might be potential barriers to implementing Coverdell objectives. Even among those of the Coverdell activities, interviewees were not aware of strategy C6 or that DOH will develop a new protocol to be implemented at their institution.
- Implementation contexts are different for hospitals located in less populated/rural areas:
  - All institutions have processes to assess, approve, provide training (for all staff involved), then implement the new protocol. The DOH can facilitate implementation by disseminating information about the new protocol that is in development and/or working with implementing partners to initiate any processes/procedures that are required by their organizations.
  - The procedures for adopting/implementing a new protocol outlined by the interviewees are not comprehensive, there might be other requirements that may not be evident until the approval/implementation process is engaged.
- Implementation (at any hospital or statewide) may not begin until the new protocol has been vetted and voted to be adopted by the HSC members. Some hospitals may adopt a new protocol based on the business decisions of their corporate teams.
- The LVO diversion has a 50% false positive rate (according to an Oʻahu hospital). The HSC may take time to analyze and compare Hawaiʻi's LVO diversion data (non-randomized pilot) with national data that were randomized.
- One of the unintended outcomes resulting from over diversion is the removal of ambulances away from their assigned areas of service and creating a gap for those requiring services for other medical emergencies.
- Stakeholders reported that protocols, such as LVO diversion, had a direct impact on how hospital resources are allocated. When working to implement a new care protocol with strategy C6, DOH should consider if there may be any unintended (and possibly long term) negative effects on how resources for stroke care are allocated at the hospitals.