

# 2024 Catalyst Grant Program

## Project Grant Application

### Funding Opportunity for Innovative Ideas from All Employees

Catalyst Grants fund projects that enhance translational research, foster innovation, and range in cost and complexity.

### PROJECT GRANT SUMMARY

Grant Description	Funding Amount	Timeline	Final Deliverables
Easy to implement and produces rapid results.	\$1,000 - \$10,000	6-12 months	<ul style="list-style-type: none"><li>▪ New product, device, process, or intervention</li><li>▪ Presentation (internal/external)</li></ul>

**The Project Grant** is intended for projects that are low cost, easy to implement and immediately impact our patients and/or organization. Ideas for these projects typically come from individuals from many departments with little to no research experience. Project Grant topics are unlimited, but may include projects that modify patient care, develop equipment or devices (*e.g.*, developing a new trach tube connector, creating a prototype orthotic) or refine a system or process (*e.g.*, ordering food, creating training videos for patient/family education, etc.)

This Catalyst Grant cycle includes a special funding opportunity for 1-2 Project Grant(s) specific to the **care and rehabilitation of individuals with Multiple Sclerosis**. Thus, individuals with ideas related to this population are especially encouraged to apply.

### Project Grant Application Instructions

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- 1) **Every application must include a researcher and non-researcher (clinician or non-clinician).**  
Applicants do not need to have previous research experience, but must have a researcher on their team. If you need assistance identifying a research partner, please contact Melissa Briody ([mbriody@sralab.org](mailto:mbriody@sralab.org)).
- 2) The Project Grant Application consists of the 10 questions below. Please complete all sections with single-spaced Arial 11pt font and follow instructions carefully.
- 3) Application Resources are available at [www.sralab.org/CatalystGrant2024](http://www.sralab.org/CatalystGrant2024)
- 4) Applications for all grant types should be submitted as a single PDF file at <https://competitions.fsm.northwestern.edu/grants/CatalystGrant24> by **March 1, 2024, 11:59pm CST.**

Title of project: "Innovative, Comfortable, Affordable Left Ventricular Assist Device (LVAD) Belt"

1. List each team member with their position, department, and proposed role on the project:

Team Member	SRAlab Position	Department	Role on this project
Katlyn Fisk	Occupational therapy	19 <sup>th</sup> Floor IP	Creator/design
Suzanne Finucane	Director, Research Operations	Center for Bionic Medicine	Research PI/collaborator
Bridget Fowler King	Master (Senior II) Physical Therapist	20 <sup>th</sup> floor Innovation center, 19 <sup>th</sup> floor Research	Mentoring in research process, survey design, writing, preparing deliverables

2. Briefly, what is your project idea?



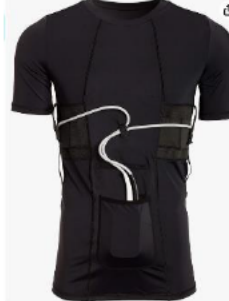

Update and design a low-cost wearable garment for management and carry of batteries and monitor of Left Ventricular Assist Device (LVAD) with user centered design methods for immediate patient use in hospital settings. The LVAD Belt would be an alternative solution to the currently offered devices that are costly, cumbersome, and bulky. The LVAD Belt would allow for improved balance, comfort, and ease of donning/doffing as well as safety for protecting LVAD wires with everyday activities.

Currently I have fabricated and trialed a prototype of my design idea using ready-made materials and abdominal binders which are accessible and billable in our Par Ex medical supply closets (**Figure A**) and provided to patients with LVADs. OTs, PTs, RNs, MDs, CMs have gained awareness of my prototypes and have requested them for their patients at SRAlab. To date, I have fabricated and provided ~50 LVAD belts in the last year with more requests coming from outside of our organization as well. Patients have reported satisfaction with the current LVAD belt prototype (**Figure B**). LVAD nurses from Northwestern Memorial Hospital (NMH) VAD teams have contacted me to ask about obtaining LVAD belts for their patients. Previously discharged patients have also returned and requested backup LVAD belts and have provided feedback on improving design. I would like to: **1). incorporate patient feedback into my design by updating my prototype with improved cord organization and black material and 2). to increase patient access to my product.**

3. What problem does your idea solve?

Post LVAD placement patients are provided with a manufacturer (Abbott) cross body bag, or vest to hold two large and cumbersome LVAD batteries and controller unit. The two batteries and monitor patients are required to always have on them weigh eight pounds (**Figure C**). The bag and vest are insufficient for our patient's causing safety concerns with managing LVAD wires, mobility, and balance. Patients also do not attempt to use the vest due to complexity of setup, number of straps, waistband interference with clothing management during toileting and dressing tasks. Patients can self-purchase additional costly garments on Amazon, Etsy, or secondary websites, but patients have run into challenges with specific sizing and returning items (**Table 1**).

**Table 1.** Comparison of current garments available to LVAD Belt

	Cross body bag	Vest	LVAD Shirt	My Idea: LVAD Belt
<b>Image</b>				
<b>Cost</b>	Provided by LVAD team (no additional cost)	<ul style="list-style-type: none"> <li>• Provided by LVAD team (no additional cost)</li> </ul>	Costs \$90-150 online	Goal~\$20 Currently: requires my time (\$41.00/hr. x 2hrs per product)
<b>Current Perceived Barriers</b>	<ul style="list-style-type: none"> <li>• Shoulder pain</li> <li>• Uneven weight distribution with mobility, challenges balance</li> <li>• Must be worn over clothing</li> <li>• Difficult to manage during sit to stand</li> <li>• Does not fit well in chair</li> </ul>	<ul style="list-style-type: none"> <li>• Difficult to manage clothing during toileting and dressing</li> <li>• Requires frequent re-adjustment</li> <li>• Separate shoulder straps and waist band, challenge for patients to manage independently</li> <li>• Waist band very narrow and reported to be uncomfortable</li> <li>• Must be worn over clothing</li> <li>• Must place batteries and monitor into separate clip holsters that can be challenging to manage</li> </ul>	<ul style="list-style-type: none"> <li>• Greater out of pocket cost</li> <li>• Must be purchased independently</li> <li>• Unable to trial before purchase</li> </ul>	Accessibility-Must be admitted IP to SRALab and connect with staff aware of option)
<b>Anticipated Benefits</b>	<ul style="list-style-type: none"> <li>• No additional cost to patient</li> <li>• Able to keep two batteries and monitor close together</li> <li>• Cords out of sight</li> </ul>	<ul style="list-style-type: none"> <li>• No additional cost to patient</li> <li>• More even weight distribution during mobility</li> </ul>	<ul style="list-style-type: none"> <li>• More even weight distribution during mobility</li> <li>• Able to be worn under clothing</li> </ul>	<ul style="list-style-type: none"> <li>-More even weight distribution during mobility</li> <li>-Ease of donning/doffing</li> <li>-Able to be worn under clothing</li> <li>-Simple to transfer LVAD monitor and batteries into pockets</li> </ul>

<p><b>Website</b></p>	<p><a href="https://www.cardiovascular.abbott/us/en/hcp/products/heart-failure/left-ventricular-assist-devices/heartmate-3/about.html">https://www.cardiovascular.abbott/us/en/hcp/products/heart-failure/left-ventricular-assist-devices/heartmate-3/about.html</a></p>	<p><a href="https://www.cardiovascular.abbott/us/en/hcp/products/heart-failure/left-ventricular-assist-devices/heartmate-3/about.html">https://www.cardiovascular.abbott/us/en/hcp/products/heart-failure/left-ventricular-assist-devices/heartmate-3/about.html</a></p>	<p><a href="https://www.mylvad.com/patients-caregivers/lvad-lifestyle/living-lvad/lvad-clothing-options">https://www.mylvad.com/patients-caregivers/lvad-lifestyle/living-lvad/lvad-clothing-options</a></p> <p><a href="https://vadwearvests.com/">https://vadwearvests.com/</a></p> <p><a href="https://lvadgear.com/">https://lvadgear.com/</a></p> <p><a href="https://lvadline.com/en/">https://lvadline.com/en/</a></p>	
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**4. How are you going to solve the problem? List the proposed steps.**

I plan to fabricate 25 LVAD Belts for 25 inpatients (based on current feedback I have received from patients who have trialed the current LVAD belt), survey the 25 inpatients receiving the garment during their inpatient stay after a 3–5-day trial period about their experience, satisfaction, and feedback for design improvement. Patients will be offered the opportunity to provide further feedback with a follow up survey after discharge and after a final prototype is designed and developed. I will collaborate with David Zembower and the Technology Transfer Team to begin the process for patent application to manufacture and make the garments at scale and allow Shirley Ryan Ability Lab (or other hospitals) to provide this product to patients at a low cost.

**Steps:**

1. Fabricate a waist belt out of durable plush elastic (non-latex) material in patient reported preferred color of black
2. Optimize pocket placement for even weight distribution to address safety with cord management, improve balance, and ease of mobility.
3. Provide 25 LVAD Belts (small, medium, large sizes) to appropriate consented inpatients with user centered design surveys for satisfaction and feedback to improve design before patent application.
4. Present and survey 25 inpatient medical providers (RN, MD, therapists) who work with patients post LVAD within SRALab to obtain feedback on design, ease of use, and safety of LVAD Belt before final fabrication and in preparation for presentation to outside hospitals and medical professionals (NMH, University of Chicago).

**5. What is the ideal outcome for this project?**

- Develop an affordable, wearable product incorporating user design methods obtained from satisfaction surveys.
- Present and survey medical professionals (RN, MD, therapies) within SRALab
- Begin conversation with Technology Transfer Team and legal departments for patent application and market scalability and accessibility for hospitals with LVAD patients.
- Provide an LVAD Belt that is low cost and can be paid for by patients commercially or purchased through hospital medical suppliers.
- All patients within SRALab who have LVADs would have easy access to this product during their episode of inpatient care.
- Poster or paper presentation for AOTA or APTA combined sections meeting for 2025 (consider manuscript for American Heart Association).

- Inservice with Northwestern Memorial Hospital, University of Chicago following survey of medical professionals within SRALab.

My long-term goal would be to establish an accessible route to provide this garment to patients when they are still in hospital settings (Acute care or Inpatient Rehabilitation) or soon after LVAD placement. I am currently the only person creating and providing LVAD belt to people. I would like to establish a sustainable plan for patients with LVADs to receive a garment that is more functional, comfortable, easy to wear, with minimal cost to the patient, than what is currently offered.

**6. How will you determine whether the project is successful?**

- Survey questions will include questions that assess usability, satisfaction, and comfort with existing LVAD carrying devices compared to use of the new LVAD belt. Patient survey feedback will be implemented into the design of the new LVAD Belt.
- Reassess satisfaction and benefit of product post discharge and provide the 25 patient users with the opportunity for follow-up survey after final design of product is fabricated.
- Present and survey IP health professionals at SRALab (MD, RN, OT, PT, SLP) for feedback on improved LVAD Belt design
- Survey market need with healthcare professionals who work directly with LVAD patients (RN, therapist, MD, cardio) on current devices available and feedback on LVAD Belt

**7. What help do you need to complete the project?**

- Funding to purchase ideal materials and equipment to create prototypes based on previously obtained patient feedback.
- Research support to help design optimal outcome measures and incorporate user design methodology.
- Survey design/building support and data analysis.
- Mentoring on paper and poster presentation development
- Consult with SRALab Technology Transfer and legal departments to determine feasibility of bringing my product design to market.

**8. Use the table on the following page to estimate your budget. Project Grant awards range from \$1,000-\$10,000. (Please double click in a cell to make it an editable Excel table.)**

LVAD Belt Budget					
Labor Expenses					
Name	Position/Title	Current Salary rate per hour	Fringe benefit*	# hours on project	Total
Katlyn Fisk	OTD, OTR/L, CTL		1.3		\$5,348.00
Suzanne Finucane	Director, Research Operations		1.3		\$840.84
Bridget Fowler	Senior II Therapist		1.3		\$964.55
Stacionian	Stacionian		1.3		\$585.00
			1.3		\$0.00
			1.3		\$0.00
			1.3		\$0.00
			1.3		\$0.00
<b>Total Labor Expenses</b>					<b>\$7,738.39</b>
**Non-Labor Expenses (Subawards, Consultants, Experts, Supplies, Equipment, Subject Reimbursement, etc.)					
Item/Description	Cost per unit	# units needed	Total		
Black binder material	\$17	27	\$446.31		
Thread and seam ripper and one wrap velcro roll (\$8/each)	\$10	6	\$60.00		
2" Sew on Velcro	\$9	6	\$54.00		
Serger Machine	370	1	\$370.00		
Heavy duty Sewing Machine	\$300	1	\$300.00		
<b>Total Non-Labor Expenses</b>					<b>\$1,230.31</b>
<b>Indirects @ 10%</b>					<b>\$896.87</b>
<b>Total Budget</b>					<b>\$9,865.57</b>

*\*Employee benefit rates may be adjusted in outlying fiscal years based on newly negotiated DHHS-approved fixed rates.*

*\*\*Travel, conference, publication fees, entertainment of visitors, capital equipment and internal/external teaching activities are not approved budget items.*

**Material/equipment needed to fabricate 25 LVAD belts:**

- **Elastic material (\$17/each):** [https://www.amazon.com/Inches-Black-Stretch-Elasticity-Elastic/dp/B072JWY5WJ/ref=asc\\_df\\_B072JWY5WJ/?tag=hyprod-20&linkCode=df0&hvadid=216865330700&hvpos=&hvnetw=g&hvrand=3320287877302826807&hvpone=&hvptwo=&hvgmt=&hvdev=c&hvdvcmdl=&hvlocint=&hvlocphy=9021519&hvtargid=pla-354927782067&mcid=59c984ce3cbf3d42ac3b4459f2f4fd39&qclid=EAAlQobChMI2laNt6TEhAMV M2BHAR0S6gA0EAQYByABEqIKwFD BwE&th=1](https://www.amazon.com/Inches-Black-Stretch-Elasticity-Elastic/dp/B072JWY5WJ/ref=asc_df_B072JWY5WJ/?tag=hyprod-20&linkCode=df0&hvadid=216865330700&hvpos=&hvnetw=g&hvrand=3320287877302826807&hvpone=&hvptwo=&hvgmt=&hvdev=c&hvdvcmdl=&hvlocint=&hvlocphy=9021519&hvtargid=pla-354927782067&mcid=59c984ce3cbf3d42ac3b4459f2f4fd39&qclid=EAAlQobChMI2laNt6TEhAMV M2BHAR0S6gA0EAQYByABEqIKwFD BwE&th=1)
- **Sew on Velcro (\$10/each)** [https://www.amazon.com/Matenf-Excellent-Non-Adhesive-Interlocking-Clothing/dp/B0C14QZW4M/ref=sr\\_1\\_1\\_sspa?crd=1O2ACHDYY2WIZ&dib=eyJ2ljojMSJ9.iPCYTozVol7nSQqBBENL-DmRH3XW4XkpXM4JY3\\_nQ0177JYbE041kPBMGxAOcvZuhbsWvjW\\_nB1I7Pu8sfJHGZs2-wyBZdpjRuhf3bgXHijMWT4-ULBbFB9buv7NnK8IUskuoOkcqOdeLOuwAWWABLIUWrekD1eME2saD\\_ArEFz16uBf\\_RFXRByK\\_ZHvuay9cloNol4FzhF\\_OmoNcJh3WrlfcL5uq0\\_eDQDYqXAahnT-pgNa8Kqb-afIZpRmCsxEE\\_4fUteJFkqns3ipHPV7XzY445rFK6BvE-](https://www.amazon.com/Matenf-Excellent-Non-Adhesive-Interlocking-Clothing/dp/B0C14QZW4M/ref=sr_1_1_sspa?crd=1O2ACHDYY2WIZ&dib=eyJ2ljojMSJ9.iPCYTozVol7nSQqBBENL-DmRH3XW4XkpXM4JY3_nQ0177JYbE041kPBMGxAOcvZuhbsWvjW_nB1I7Pu8sfJHGZs2-wyBZdpjRuhf3bgXHijMWT4-ULBbFB9buv7NnK8IUskuoOkcqOdeLOuwAWWABLIUWrekD1eME2saD_ArEFz16uBf_RFXRByK_ZHvuay9cloNol4FzhF_OmoNcJh3WrlfcL5uq0_eDQDYqXAahnT-pgNa8Kqb-afIZpRmCsxEE_4fUteJFkqns3ipHPV7XzY445rFK6BvE-)

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- **One wrap Velcro (\$8/each)** [https://www.amazon.com/VELCRO-Brand-ONE-WRAP-Tape-Black/dp/B00I0TTPL8/ref=sr\\_1\\_3?crd=1PNL07SE1XY57&dib=eyJ2IjoieMSJ9.euO13GjWyYL547eP8pOnuPPybW8b-qfvTtUD-U-qpCumiCEw6rWfifJrRENFLqSJ--Lz2y5hHfDMjRLFhkEgfGsDiFn5VlsNf2lxjQ9rZL3Qc585xR22x5NF14vfqX6Tdb5phP9nAfuo6FtPZKMBrY-jUm4-fEleE\\_v9-zuml6yhgCkhjwwjuWpO3kCJVbZdzz9Eqjqgp8RGSuelQuOaXWP8\\_7VI1pDZjxcMimAU.5T8\\_L1nnfnN6xm87VPWbHAjTbtrdHDu-jTPpriVOoKQ&dib\\_tag=se&keywords=black+one+wrap+velcro&qid=1708970170&srefix=black+one+wrap%2Caps%2C104&sr=8-3](https://www.amazon.com/VELCRO-Brand-ONE-WRAP-Tape-Black/dp/B00I0TTPL8/ref=sr_1_3?crd=1PNL07SE1XY57&dib=eyJ2IjoieMSJ9.euO13GjWyYL547eP8pOnuPPybW8b-qfvTtUD-U-qpCumiCEw6rWfifJrRENFLqSJ--Lz2y5hHfDMjRLFhkEgfGsDiFn5VlsNf2lxjQ9rZL3Qc585xR22x5NF14vfqX6Tdb5phP9nAfuo6FtPZKMBrY-jUm4-fEleE_v9-zuml6yhgCkhjwwjuWpO3kCJVbZdzz9Eqjqgp8RGSuelQuOaXWP8_7VI1pDZjxcMimAU.5T8_L1nnfnN6xm87VPWbHAjTbtrdHDu-jTPpriVOoKQ&dib_tag=se&keywords=black+one+wrap+velcro&qid=1708970170&srefix=black+one+wrap%2Caps%2C104&sr=8-3)
- **Serger (\$370):** <https://www.amazon.com/dp/B0741HM3HW?tag=highlightreviews-327039-20>
- **Heavy Duty Sewing Machine (\$300):** <https://www.singer.com/heavy-duty-4411-sewing-machine>

9. Please provide a sketch or picture of the idea



**Figure A**

Original design made out of white abdominal binders, project idea would be to fabricate a black elastic material with improved pockets and cord organization.



Why I Nominated You:

BECAUSE YOUR KINDNESS, CARING  
THOUGHTFULNESS.  
YOU REALLY MADE MY LIFE  
VERY COMFORTABLE WHEN YOU  
MADE MY LVAD HOLDER,  
AND THE CARE THAT WAS  
PUT INTO ~~IT~~ REALLY WAS  
SHOWN, WHEN I PUT IT  
ON.  
MY WIFE & I THANK YOU VERY  
MUCH.

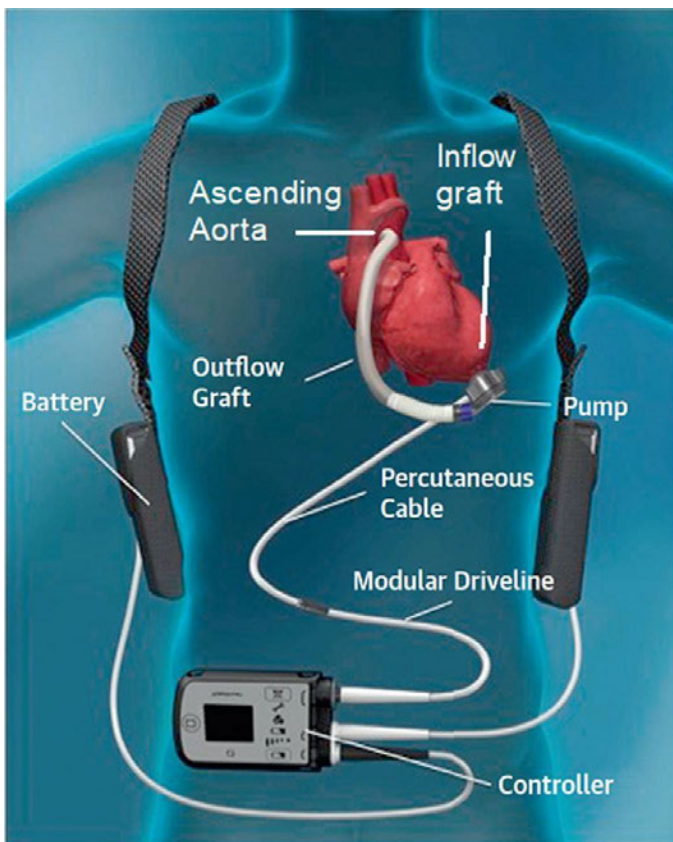
The Shirley Ryan AbilityLab's Prince Family Esprit! Program Peer Recognition Esprit! Award helps our staff recognize colleagues who demonstrate our Core Values and who go above and beyond by surpassing goals, exceeding expectations, or volunteering to assist others at the Shirley Ryan AbilityLab beyond his/her regular job duties.



“Because (of) your kindness, caring thoughtfulness. You really made my life very comfortable when you made my LVAD holder, and the care that was put into (it) really was shown when I put it on. My wife and I thank you very much”

(Patient with LVAD, November 2022)

Figure B




**2024**  
Project Grant Application



**Figure C**

Signature of primary non-research applicant: *Katlyn Fisk, OT*

Date: 3/15/2024

Suzanne B. Finucane  Digitally signed by Suzanne B. Finucane  
Date: 2024.03.15 13:22:00 -05'00'

Signature of primary research applicant:

Date: 3/15/2024