

ILLINOIS HEALTH FACILITIES AND SERVICES REVIEW BOARD
APPLICATION FOR PERMIT

25-033
RECEIVED

SECTION I. IDENTIFICATION, GENERAL INFORMATION, AND CERTIFICATION

AUG 18 2025

This Section must be completed for all projects.

HEALTH FACILITIES &
 SERVICES REVIEW BOARD

Facility/Project Identification

Facility Name:	Northwestern Medicine Lake Forest Hospital Open Heart Surgery Program		
Street Address:	1000 North Westmoreland Road		
City and Zip Code:	Lake Forest, IL 60045		
County:	Lake	Health Service Area:	8
		Health Planning Area:	A-09

Applicant(s) [Provide for each applicant (refer to Part 1130.220)]

Exact Legal Name:	Northwestern Lake Forest Hospital
Street Address:	1000 North Westmoreland Road
City and Zip Code:	Lake Forest, IL 60045
Name of Registered Agent:	Julia K. Lynch
Registered Agent Street Address:	211 East Ontario Street Suite 1800
Registered Agent City and Zip Code:	Chicago, IL 60611
Name of Chief Executive Officer:	Seamus Collins
CEO Street Address:	1000 North Westmoreland Road
CEO City and Zip Code:	Lake Forest, IL 60045
CEO Telephone Number:	847-535-8683

Type of Ownership of Applicants

- | | | |
|--|--|--------------------------------|
| <input checked="" type="checkbox"/> Non-profit Corporation | <input type="checkbox"/> Partnership | |
| <input type="checkbox"/> For-profit Corporation | <input type="checkbox"/> Governmental | |
| <input type="checkbox"/> Limited Liability Company | <input type="checkbox"/> Sole Proprietorship | <input type="checkbox"/> Other |
- o Corporations and limited liability companies must provide an **Illinois certificate of good standing**.
 - o Partnerships must provide the name of the state in which they are organized and the name and address of each partner specifying whether each is a general or limited partner.

APPEND DOCUMENTATION AS ATTACHMENT 1 IN NUMERIC SEQUENTIAL ORDER AFTER THE LAST PAGE OF THE APPLICATION FORM.

Primary Contact [Person to receive ALL correspondence or inquiries]

Name:	Bridget Orth
Title:	Director, Regulatory Planning
Company Name:	Northwestern Memorial HealthCare
Address:	541 N Fairbanks Court Suite 2700, Chicago, IL 60611
Telephone Number:	312-926-8650
E-mail Address:	borth@nm.org
Fax Number:	312-926-0373

Additional Contact [Person who is also authorized to discuss the application for permit]

Name:	Amanda Pulse-Morton
Title:	Manager, Regulatory Planning
Company Name:	Northwestern Memorial HealthCare
Address:	541 N Fairbanks Court Suite 2700, Chicago, IL 60611
Telephone Number:	312-926-2846
E-mail Address:	amanda.pulse@nm.org
Fax Number:	312-926-0373

ILLINOIS HEALTH FACILITIES AND SERVICES REVIEW BOARD APPLICATION FOR PERMIT

SECTION I. IDENTIFICATION, GENERAL INFORMATION, AND CERTIFICATION

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County:	Lake	Health Service Area:	8
		Health Planning Area:	A-09

Applicant(s) [Provide for each applicant (refer to Part 1130.220)]

Exact Legal Name:	Northwestern Memorial HealthCare
Street Address:	251 East Huron Street
City and Zip Code:	Chicago, IL 60611
Name of Registered Agent:	Julia K. Lynch
Registered Agent Street Address:	211 East Ontario Street Suite 1800
Registered Agent City and Zip Code:	Chicago, IL 60611
Name of Chief Executive Officer:	Howard B. Chrisman, MD
CEO Street Address:	251 East Huron Street
CEO City and Zip Code:	Chicago, IL 60611
CEO Telephone Number:	312-926-0016

Type of Ownership of Applicants

- | | |
|--|--|
| <input checked="" type="checkbox"/> Non-profit Corporation | <input type="checkbox"/> Partnership |
| <input type="checkbox"/> For-profit Corporation | <input type="checkbox"/> Governmental |
| <input type="checkbox"/> Limited Liability Company | <input type="checkbox"/> Sole Proprietorship |
| | <input type="checkbox"/> Other |
- Corporations and limited liability companies must provide an **Illinois certificate of good standing**.
 - Partnerships must provide the name of the state in which they are organized and the name and address of each partner specifying whether each is a general or limited partner.

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Name:	Amanda Pulse-Morton
Title:	Manager, Regulatory Planning
Company Name:	Northwestern Memorial HealthCare
Address:	541 N Fairbanks Court Suite 2700, Chicago, IL 60611
Telephone Number:	312-926-2846
E-mail Address:	amanda.pulse@nm.org
Fax Number:	312-926-0373

Post Permit Contact

[Person to receive all correspondence after permit issuance-THIS PERSON MUST BE EMPLOYED BY THE LICENSED HEALTH CARE FACILITY AS DEFINED AT 20 ILCS 3960]

Name:	Bridget Orth
Title:	Director, Regulatory Planning
Company Name:	Northwestern Memorial HealthCare
Address:	541 N Fairbanks Court Suite 2700, Chicago, IL 60611
Telephone Number:	312-926-8650
E-mail Address:	borth@nm.org
Fax Number:	312-926-0373

Site Ownership

[Provide this information for each applicable site]

Exact Legal Name of Site Owner:	Northwestern Lake Forest Hospital
Address of Site Owner:	1000 North Westmoreland Road, Lake Forest, IL 60045
Street Address or Legal Description of the Site:	Proof of ownership or control of the site is to be provided as Attachment 2. Examples of proof of ownership are property tax statements, tax assessor's documentation, deed, notarized statement of the corporation attesting to ownership, an option to lease, a letter of intent to lease, or a lease.
APPEND DOCUMENTATION AS ATTACHMENT 2, IN NUMERIC SEQUENTIAL ORDER AFTER THE LAST PAGE OF THE APPLICATION FORM.	

Operating Identity/Licensee

[Provide this information for each applicable facility and insert after this page.]

Exact Legal Name:	Northwestern Lake Forest Hospital		
Address:	1000 North Westmoreland Road, Lake Forest, IL 60045		
<input checked="" type="checkbox"/>	Non-profit Corporation	<input type="checkbox"/>	Partnership
<input type="checkbox"/>	For-profit Corporation	<input type="checkbox"/>	Governmental
<input type="checkbox"/>	Limited Liability Company	<input type="checkbox"/>	Sole Proprietorship
		<input type="checkbox"/>	Other
<ul style="list-style-type: none"> Corporations and limited liability companies must provide an Illinois Certificate of Good Standing. Partnerships must provide the name of the state in which organized and the name and address of each partner specifying whether each is a general or limited partner. Persons with 5 percent or greater interest in the licensee must be identified with the % of ownership. 			
APPEND DOCUMENTATION AS ATTACHMENT 3, IN NUMERIC SEQUENTIAL ORDER AFTER THE LAST PAGE OF THE APPLICATION FORM.			

Organizational Relationships

Provide (for each applicant) an organizational chart containing the name and relationship of any person or entity who is related (as defined in Part 1130.140). If the related person or entity is participating in the development or funding of the project, describe the interest and the amount and type of any financial contribution.

APPEND DOCUMENTATION AS ATTACHMENT 4, IN NUMERIC SEQUENTIAL ORDER AFTER THE LAST PAGE OF THE APPLICATION FORM.

Flood Plain Requirements

[Refer to application instructions.]

Provide documentation that the project complies with the requirements of Illinois Executive Order #2006-5 pertaining to construction activities in special flood hazard areas. As part of the flood plain requirements, please provide a map of the proposed project location showing any identified floodplain areas. Floodplain maps can be printed at www.FEMA.gov or www.illinoisfloodmaps.org. **This map must be in a readable format.** In addition, please provide a statement attesting that the project complies with the requirements of Illinois Executive Order #2006-5 (<http://www.hfsrb.illinois.gov>). **NOTE:** A SPECIAL FLOOD HAZARD AREA AND 500-YEAR FLOODPLAIN DETERMINATION FORM has been added at the conclusion of this Application for Permit that must be completed to deem a project complete.

APPEND DOCUMENTATION AS **ATTACHMENT 5**, IN NUMERIC SEQUENTIAL ORDER AFTER THE LAST PAGE OF THE APPLICATION FORM.

Historic Resources Preservation Act Requirements

[Refer to application instructions.]

Provide documentation regarding compliance with the requirements of the Historic Resources Preservation Act.

APPEND DOCUMENTATION AS **ATTACHMENT 6**, IN NUMERIC SEQUENTIAL ORDER AFTER THE LAST PAGE OF THE APPLICATION FORM.

DESCRIPTION OF PROJECT**1. Project Classification**

[Check those applicable - refer to Part 1110.20 and Part 1120.20(b)]

Part 1110 Classification :

☒ Substantive

☐ Non-substantive

2. Narrative Description

In the space below, provide a brief narrative description of the project. Explain **WHAT** is to be done in **State Board defined terms, NOT WHY** it is being done. If the project site does NOT have a street address, include a legal description of the site. Include the rationale regarding the project's classification as substantive or non-substantive.

Northwestern Lake Forest Hospital (LFH) proposes to establish open heart surgery as an approved category of service to the existing hospital located at 1000 North Westmoreland Road in Lake Forest, IL.

The proposed open heart surgeries will be performed in the existing operating rooms and there will be no new construction related to this project. There will be equipment purchased with a total project cost of \$2,840,000.

The anticipated project completion date is: March 31, 2027.

This project is classified as substantive because it proposes the establishment of a category of service within an existing health care facility.

Project Costs and Sources of Funds

Complete the following table listing all costs (refer to Part 1120.110) associated with the project. When a project or any component of a project is to be accomplished by lease, donation, gift, or other means, the fair market or dollar value (refer to Part 1130.140) of the component must be included in the estimated project cost. If the project contains non-reviewable components that are not related to the provision of health care, complete the second column of the table below. Note, the use and sources of funds must be equal.

Project Costs and Sources of Funds			
USE OF FUNDS	CLINICAL	NONCLINICAL	TOTAL
Preplanning Costs			
Site Survey and Soil Investigation			
Site Preparation			
Off Site Work			
New Construction Contracts			
Modernization Contracts			
Contingencies			
Architectural/Engineering Fees			
Consulting and Other Fees			
Movable or Other Equipment (not in construction contracts)	\$ 2,840,000		\$ 2,840,000
Bond Issuance Expense (project related)			
Net Interest Expense During Construction (project related)			
Fair Market Value of Leased Space or Equipment			
Other Costs to Be Capitalized			
Acquisition of Building or Other Property (excluding land)			
TOTAL USES OF FUNDS	\$ 2,840,000		\$ 2,840,000
SOURCE OF FUNDS	CLINICAL	NONCLINICAL	TOTAL
Cash and Securities	\$ 2,840,000		\$ 2,840,000
Pledges			
Gifts and Bequests			
Bond Issues (project related)			
Mortgages			
Leases (fair market value)			
Governmental Appropriations			
Grants			
Other Funds and Sources			
TOTAL SOURCES OF FUNDS	\$ 2,840,000		\$ 2,840,000
NOTE: ITEMIZATION OF EACH LINE ITEM MUST BE PROVIDED AT ATTACHMENT 7, IN NUMERIC SEQUENTIAL ORDER AFTER THE LAST PAGE OF THE APPLICATION FORM.			

Related Project Costs

Provide the following information, as applicable, with respect to any land related to the project that will be or has been acquired during the last two calendar years:

<p>Land acquisition is related to project <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p>Purchase Price: \$ <u>N/A</u></p> <p>Fair Market Value: \$ <u>N/A</u></p>
<p>The project involves the establishment of a new facility or a new category of service <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If yes, provide the dollar amount of all non-capitalized operating start-up costs (including operating deficits) through the first full fiscal year when the project achieves or exceeds the target utilization specified in Part 1100.</p> <p>Estimated start-up costs and operating deficit cost is <u>\$12.3 million</u>.</p>

Project Status and Completion Schedules

For facilities in which prior permits have been issued please provide the permit numbers.

Indicate the stage of the project's architectural drawings:

<p><input checked="" type="checkbox"/> None or not applicable <input type="checkbox"/> Preliminary</p> <p><input type="checkbox"/> Schematics <input type="checkbox"/> Final Working</p>
<p>Anticipated project completion date (refer to Part 1130.140): <u>March 31, 2027</u></p>
<p>Indicate the following with respect to project expenditures or to financial commitments (refer to Part 1130.140):</p> <p><input type="checkbox"/> Purchase orders, leases or contracts pertaining to the project have been executed.</p> <p><input type="checkbox"/> Financial commitment is contingent upon permit issuance. Provide a copy of the contingent "certification of financial commitment" document, highlighting any language related to CON Contingencies</p> <p><input checked="" type="checkbox"/> Financial Commitment will occur after permit issuance.</p>
<p>APPEND DOCUMENTATION AS <u>ATTACHMENT 8</u>, IN NUMERIC SEQUENTIAL ORDER AFTER THE LAST PAGE OF THE APPLICATION FORM.</p>

State Agency Submittals [Section 1130.620(c)]

Are the following submittals up to date as applicable?

- ☒ Cancer Registry
- ☒ APORS
- ☒ All formal document requests such as IDPH Questionnaires and Annual Bed Reports been submitted
- ☒ All reports regarding outstanding permits

Failure to be up to date with these requirements will result in the application for permit being deemed incomplete.

Cost Space Requirements

Provide in the following format, the **Departmental Gross Square Feet (DGSF)** or the **Building Gross Square Feet (BGSF)** and cost. The type of gross square footage either **DGSF** or **BGSF** must be identified. The sum of the department costs **MUST** equal the total estimated project costs. Indicate if any space is being reallocated for a different purpose. Include outside wall measurements plus the departments or area's portion of the surrounding circulation space. **Explain the use of any vacated space.**

Not Reviewable Space [i.e., non-clinical]: means an area for the benefit of the patients, visitors, staff, or employees of a health care facility and not directly related to the diagnosis, treatment, or rehabilitation of persons receiving services from the health care facility. "Non-clinical service areas" include, but are not limited to, chapels; gift shops; newsstands; computer systems; tunnels, walkways, and elevators; telephone systems; projects to comply with life safety codes; educational facilities; student housing; patient, employee, staff, and visitor dining areas; administration and volunteer offices; modernization of structural components (such as roof replacement and masonry work); boiler repair or replacement; vehicle maintenance and storage facilities; parking facilities; mechanical systems for heating, ventilation, and air conditioning; loading docks; and repair or replacement of carpeting, tile, wall coverings, window coverings or treatments, or furniture. Solely for the purpose of this definition, "non-clinical service area" does not include health and fitness centers. [20 ILCS 3960/3]

Dept. / Area	Cost	Gross Square Feet		Amount of Proposed Total Gross Square Feet That Is:			
		Existing	Proposed	New Const.	Modernized	As Is	Vacated Space
REVIEWABLE							
Medical Surgical							
Intensive Care							
Diagnostic Radiology							
MRI							
Total Clinical							
NON-REVIEWABLE							
Administrative							
Parking							
Gift Shop							
Total Non-clinical							
TOTAL							

APPEND DOCUMENTATION AS ATTACHMENT 9, IN NUMERIC SEQUENTIAL ORDER AFTER THE LAST PAGE OF THE APPLICATION FORM.

Facility Bed Capacity and Utilization

Complete the following chart, as applicable. Complete a separate chart for each facility that is a part of the project and insert the chart after this page. Provide the existing bed capacity and utilization data for the latest **Calendar Year for which data is available**. Include **observation days in the patient day totals for each bed service**. Any bed capacity discrepancy from the Inventory will result in the application being deemed **incomplete**.

FACILITY NAME: NM Lake Forest Hospital		CITY: Lake Forest			
REPORTING PERIOD DATES: CY24 From: 1/1/2024 to: 12/31/2024					
Category of Service	Authorized Beds	Admissions	Patient Days	Bed Changes	Proposed Beds
Medical/Surgical	168	8,480	41,418	0	168
Obstetrics	18	1,779	4,362	0	18
Pediatrics	0	0	0	0	0
Intensive Care	24	1,151	4,671	0	24
Comprehensive Physical Rehabilitation	0	0	0	0	0
Acute/Chronic Mental Illness	0	0	0	0	0
Neonatal Intensive Care	0	0	0	0	0
General Long-Term Care	0	0	0	0	0
Specialized Long-Term Care	0	0	0	0	0
Long Term Acute Care	0	0	0	0	0
Other ((identify))	0	0	0	0	0
TOTALS:	210	11,410	50,451	0	210

CERTIFICATION

The Application must be signed by the authorized representatives of the applicant entity. Authorized representatives are:

- in the case of a corporation, any two of its officers or members of its Board of Directors.
- in the case of a limited liability company, any two of its managers or members (or the sole manager or member when two or more managers or members do not exist).
- in the case of a partnership, two of its general partners (or the sole general partner, when two or more general partners do not exist).
- in the case of estates and trusts, two of its beneficiaries (or the sole beneficiary when two or more beneficiaries do not exist); and
- in the case of a sole proprietor, the individual that is the proprietor.

This Application is filed on the behalf of Northwestern Lake Forest Hospital *
in accordance with the requirements and procedures of the Illinois Health Facilities Planning Act. The undersigned certifies that he or she has the authority to execute and file this Application on behalf of the applicant entity. The undersigned further certifies that the data and information provided herein, and appended hereto, are complete and correct to the best of his or her knowledge and belief. The undersigned also certifies that the fee required for this application is sent herewith or will be paid upon request.



SIGNATURE

Seamus Collins

PRINTED NAME

President

PRINTED TITLE



SIGNATURE

John A. Orsini

PRINTED NAME

Treasurer

PRINTED TITLE

Notarization:

Subscribed and sworn to before me
this 14th day of August 2025

Signature of Notary

Seal

Notarization:

Subscribed and sworn to before me
this 14 day of August 2025

Signature of Notary

Seal

*Insert the EXACT legal name of the applicant

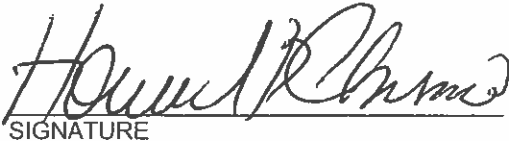


CERTIFICATION

The Application must be signed by the authorized representatives of the applicant entity. Authorized representatives are:

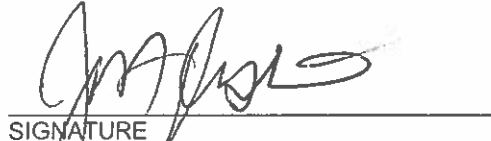
- in the case of a corporation, any two of its officers or members of its Board of Directors.
- in the case of a limited liability company, any two of its managers or members (or the sole manager or member when two or more managers or members do not exist).
- in the case of a partnership, two of its general partners (or the sole general partner, when two or more general partners do not exist).
- in the case of estates and trusts, two of its beneficiaries (or the sole beneficiary when two or more beneficiaries do not exist); and
- in the case of a sole proprietor, the individual that is the proprietor.

This Application is filed on the behalf of Northwestern Memorial HealthCare (NMHC) *
in accordance with the requirements and procedures of the Illinois Health Facilities Planning Act. The undersigned certifies that he or she has the authority to execute and file this Application on behalf of the applicant entity. The undersigned further certifies that the data and information provided herein, and appended hereto, are complete and correct to the best of his or her knowledge and belief. The undersigned also certifies that the fee required for this application is sent herewith or will be paid upon request.


SIGNATURE

Howard B. Chrisman, MD
PRINTED NAME

President & CEO
PRINTED TITLE


SIGNATURE

John A. Orsini
PRINTED NAME

Treasurer
PRINTED TITLE

Notarization:
Subscribed and sworn to before me
this 14 day of August 2025


Signature of Notary

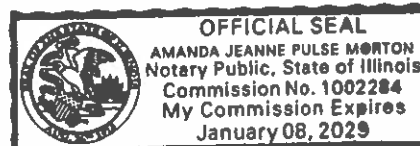
Seal

Notarization:
Subscribed and sworn to before me
this 14 day of August 2025


Signature of Notary

Seal

*Insert the EXACT legal name of the applicant



SECTION III. BACKGROUND, PURPOSE OF THE PROJECT, AND ALTERNATIVES - INFORMATION REQUIREMENTS

This Section is applicable to all projects except those that are solely for discontinuation with no project costs.

1110.110(a) – Background of the Applicant

READ THE REVIEW CRITERION and provide the following required information:

BACKGROUND OF APPLICANT

1. A listing of all health care facilities owned or operated by the applicant, including licensing, and certification if applicable.
2. A listing of all health care facilities currently owned and/or operated in Illinois, by any corporate officers or directors, LLC members, partners, or owners of at least 5% of the proposed health care facility.
3. For the following questions, please provide information for each applicant, including corporate officers or directors, LLC members, partners, and owners of at least 5% of the proposed facility. A health care facility is considered owned or operated by every person or entity that owns, directly or indirectly, an ownership interest.
 - a. A certified listing of any adverse action taken against any facility owned and/or operated by the applicant, directly or indirectly, during the three years prior to the filing of the application.
 - b. A certified listing of each applicant, identifying those individuals that have been cited, arrested, taken into custody, charged with, indicted, convicted, or tried for, or pled guilty to the commission of any felony or misdemeanor or violation of the law, except for minor parking violations; or the subject of any juvenile delinquency or youthful offender proceeding. Unless expunged, provide details about the conviction, and submit any police or court records regarding any matters disclosed.
 - c. A certified and detailed listing of each applicant or person charged with fraudulent conduct or any act involving moral turpitude.
 - d. A certified listing of each applicant with one or more unsatisfied judgements against him or her.
 - e. A certified and detailed listing of each applicant who is in default in the performance or discharge of any duty or obligation imposed by a judgment, decree, order or directive of any court or governmental agency.
4. Authorization permitting HFSRB and DPH access to any documents necessary to verify the information submitted, including, but not limited to official records of DPH or other State agencies; the licensing or certification records of other states, when applicable; and the records of nationally recognized accreditation organizations. **Failure to provide such authorization shall constitute an abandonment or withdrawal of the application without any further action by HFSRB.**
5. If, during a given calendar year, an applicant submits more than one application for permit, the documentation provided with the prior applications may be utilized to fulfill the information requirements of this criterion. In such instances, the applicant shall attest that the information was previously provided, cite the project number of the prior application, and certify that no changes have occurred regarding the information that has been previously provided. The applicant can submit amendments to previously submitted information, as needed, to update and/or clarify data.

APPEND DOCUMENTATION AS ATTACHMENT 11, IN NUMERIC SEQUENTIAL ORDER AFTER THE LAST PAGE OF THE APPLICATION FORM. EACH ITEM (1-4) MUST BE IDENTIFIED IN ATTACHMENT 11.

Criterion 1110.110(b) & (d)**PURPOSE OF PROJECT**

1. Document that the project will provide health services that improve the health care or well-being of the market area population to be served.
2. Define the planning area or market area, or other relevant area, per the applicant's definition.
3. Identify the existing problems or issues that need to be addressed as applicable and appropriate for the project.
4. Cite the sources of the documentation.
5. Detail how the project will address or improve the previously referenced issues, as well as the population's health status and well-being.
6. Provide goals with quantified and measurable objectives, with specific timeframes that relate to achieving the stated goals **as appropriate**.

For projects involving modernization, describe the conditions being upgraded, if any. For facility projects, include statements of the age and condition of the project site, as well as regulatory citations, if any. For equipment being replaced, include repair and maintenance records.

NOTE: Information regarding the "Purpose of the Project" will be included in the State Board Staff Report.

APPEND DOCUMENTATION AS ATTACHMENT 12, IN NUMERIC SEQUENTIAL ORDER AFTER THE LAST PAGE OF THE APPLICATION FORM. EACH ITEM (1-6) MUST BE IDENTIFIED IN ATTACHMENT 12.

ALTERNATIVES

- 1) Identify **ALL** the alternatives to the proposed project:

Alternative options **must** include:

- A) Proposing a project of greater or lesser scope and cost.
- B) Pursuing a joint venture or similar arrangement with one or more providers or entities to meet all or a portion of the project's intended purposes; developing alternative settings to meet all or a portion of the project's intended purposes.
- C) Utilizing other health care resources that are available to serve all or a portion of the population proposed to be served by the project; and
- D) Provide the reasons why the chosen alternative was selected.

- 2) Documentation shall consist of a comparison of the project to alternative options. The comparison shall address issues of total costs, patient access, quality, and financial benefits in both the short-term (within one to three years after project completion) and long-term. This may vary by project or situation. **FOR EVERY ALTERNATIVE IDENTIFIED, THE TOTAL PROJECT COST AND THE REASONS WHY THE ALTERNATIVE WAS REJECTED MUST BE PROVIDED.**
- 3) The applicant shall provide empirical evidence, including quantified outcome data that verifies improved quality of care, as available.

APPEND DOCUMENTATION AS ATTACHMENT 13, IN NUMERIC SEQUENTIAL ORDER AFTER THE LAST PAGE OF THE APPLICATION FORM.

SECTION IV. PROJECT SCOPE, UTILIZATION, AND UNFINISHED/SHELL SPACE**Criterion 1110.120 - Project Scope, Utilization, and Unfinished/Shell Space**

READ THE REVIEW CRITERION and provide the following information:

SIZE OF PROJECT:

1. Document that the amount of physical space proposed for the proposed project is necessary and not excessive. This must be a narrative and it shall include the basis used for determining the space and the methodology applied.
2. If the gross square footage exceeds the BGSF/DGSF standards in Appendix B, justify the discrepancy by documenting one of the following:
 - a. Additional space is needed due to the scope of services provided, justified by clinical or operational needs, as supported by published data or studies and certified by the facility's Medical Director.
 - b. The existing facility's physical configuration has constraints or impediments and requires an architectural design that delineates the constraints or impediments.
 - c. The project involves the conversion of existing space that results in excess square footage.
 - d. Additional space is mandated by governmental or certification agency requirements that were not in existence when Appendix B standards were adopted.

Provide a narrative for any discrepancies from the State Standard. A table must be provided in the following format with Attachment 14.

SIZE OF PROJECT				
DEPARTMENT/SERVICE	PROPOSED BGSF/DGSF	STATE STANDARD	DIFFERENCE	MET STANDARD?

APPEND DOCUMENTATION AS ATTACHMENT 14, IN NUMERIC SEQUENTIAL ORDER AFTER THE LAST PAGE OF THE APPLICATION FORM.

PROJECT SERVICES UTILIZATION:

This criterion is applicable only to projects or portions of projects that involve services, functions, or equipment for which HFSRB has established utilization standards or occupancy targets in 77 Ill. Adm. Code 1100.

Document that in the second year of operation, the annual utilization of the service or equipment shall meet or exceed the utilization standards specified in 1110.Appendix B. A narrative of the rationale that supports the projections must be provided.

A table must be provided in the following format with Attachment 15.

UTILIZATION					
	DEPT./ SERVICE	HISTORICAL UTILIZATION (PATIENT DAYS) (TREATMENTS) ETC.	PROJECTED UTILIZATION	STATE STANDARD	MEET STANDARD?
YEAR 1					
YEAR 2					

APPEND DOCUMENTATION AS ATTACHMENT 15, IN NUMERIC SEQUENTIAL ORDER AFTER THE LAST PAGE OF THE APPLICATION FORM.

UNFINISHED OR SHELL SPACE:

Provide the following information:

1. Total gross square footage (GSF) of the proposed shell space.
2. The anticipated use of the shell space, specifying the proposed GSF to be allocated to each department, area, or function.
3. Evidence that the shell space is being constructed due to:
 - a. Requirements of governmental or certification agencies; or
 - b. Experienced increases in the historical occupancy or utilization of those areas proposed to occupy the shell space.
4. Provide:
 - a. Historical utilization for the area for the latest five-year period for which data is available; and
 - b. Based upon the average annual percentage increase for that period, projections of future utilization of the area through the anticipated date when the shell space will be placed into operation.

APPEND DOCUMENTATION AS ATTACHMENT 16, IN NUMERIC SEQUENTIAL ORDER AFTER THE LAST PAGE OF THE APPLICATION FORM.

ASSURANCES:

Submit the following:

1. Verification that the applicant will submit to HFSRB a CON application to develop and utilize the shell space, regardless of the capital thresholds in effect at the time or the categories of service involved.
2. The estimated date by which the subsequent CON application (to develop and utilize the subject shell space) will be submitted; and
3. The anticipated date when the shell space will be completed and placed into operation.

APPEND DOCUMENTATION AS ATTACHMENT 17, IN NUMERIC SEQUENTIAL ORDER AFTER THE LAST PAGE OF THE APPLICATION FORM.

D. Criterion 1110.220 - Open Heart Surgery

1. Applicants proposing to establish, expand and/or modernize the Open-Heart Surgery category of service must submit the following information.
2. Indicate bed capacity changes by Service: Indicate # of beds changed by action(s):

Category of Service	# Existing Beds	# Proposed Beds
<input checked="" type="checkbox"/> Open Heart Surgery		

3. READ the applicable review criteria outlined below and submit the required documentation for the criteria:

1. Criterion 1110.220(b)(1), Peer Review

Read the criterion and submit a detailed explanation of your peer review program.

2. Criterion 1110.220(b)(2), Establishment of Open-Heart Surgery

Read the criterion and provide the following information:

- a. The number of cardiac catheterizations (patients) performed in the latest 12-month period for which data is available.
- b. The number of patients referred for open heart surgery following cardiac catheterization at your facility, for each of the last two years.

3. Criterion 1110.220(b)(3), Unnecessary Duplication of Services

Read the criterion and address the following:

- a. Contact all existing facilities within 90 minutes travel time of your facility which currently provide or are approved to provide open heart surgery to determine what the impact of the proposed project will be on their facility.
- b. Provide a sample copy of the letter written to each of the facilities and include a list of the facilities that were sent letters.
- c. Provide a copy of all the responses received.

4. Criterion 1110.220(b)(4), Support Services

Read the criterion and indicate on a service-by-service basis which of the services listed in this criterion are available on a 24-hour inpatient basis and explain how any services not available on a 24-hour inpatient basis can be immediately always mobilized for emergencies.

5. Criterion 1110.220(b)(5), Staffing

Read the criterion and for those positions described under this criterion provide the following information:

- a. The name and qualifications of the person currently filling the job.
- b. Application filed for a position.
- c. Signed contracts with the required staff.
- d. A detailed explanation of how you will fill the positions.

APPEND DOCUMENTATION AS ATTACHMENT 22, IN NUMERIC SEQUENTIAL ORDER AFTER THE LAST PAGE OF THE APPLICATION FORM.

The following Sections **DO NOT** need to be addressed by the applicants or co-applicants responsible for funding or guaranteeing the funding of the project if the applicant has a bond rating of A- or better from Fitch's or Standard and Poor's rating agencies, or A3 or better from Moody's (the rating shall be affirmed within the latest 18-month period prior to the submittal of the application):

- Section 1120.120 Availability of Funds – Review Criteria
- Section 1120.130 Financial Viability – Review Criteria
- Section 1120.140 Economic Feasibility – Review Criteria, subsection (a)

VII. 1120.120 - AVAILABILITY OF FUNDS

The applicant shall document those financial resources shall be available and be equal to or exceed the estimated total project cost plus any related project costs by providing evidence of sufficient financial resources from the following sources, as applicable [Indicate the dollar amount to be provided from the following sources]:

<p>_____</p>	<p>a) Cash and Securities – statements (e.g., audited financial statements, letters from financial institutions, board resolutions) as to:</p> <ol style="list-style-type: none"> 1) the amount of cash and securities available for the project, including the identification of any security, its value and availability of such funds; and 2) interest to be earned on depreciation account funds or to be earned on any asset from the date of applicant's submission through project completion.
<p>_____</p>	<p>b) Pledges – for anticipated pledges, a summary of the anticipated pledges showing anticipated receipts and discounted value, estimated timetable of gross receipts and related fundraising expenses, and a discussion of past fundraising experience.</p>
<p>_____</p>	<p>c) Gifts and Bequests – verification of the dollar amount, identification of any conditions of use, and the estimated timetable of receipts.</p>
<p>_____</p>	<p>d) Debt – a statement of the estimated terms and conditions (including the debt time, variable or permanent interest rates over the debt time, and the anticipated repayment schedule) for any interim and for the permanent financing proposed to fund the project, including:</p> <ol style="list-style-type: none"> 1) For general obligation bonds, proof of passage of the required referendum or evidence that the governmental unit has the authority to issue the bonds and evidence of the dollar amount of the issue, including any discounting anticipated. 2) For revenue bonds, proof of the feasibility of securing the specified amount and interest rate. 3) For mortgages, a letter from the prospective lender attesting to the expectation of making the loan in the amount and time indicated, including the anticipated interest rate and any conditions associated with the mortgage, such as, but not limited to, adjustable interest rates, balloon payments, etc. 4) For any lease, a copy of the lease, including all the terms and conditions, including any purchase options, any capital improvements to the property and provision of capital equipment. 5) For any option to lease, a copy of the option, including all

	terms and conditions.
	e) Governmental Appropriations – a copy of the appropriation Act or ordinance accompanied by a statement of funding availability from an official of the governmental unit. If funds are to be made available from subsequent fiscal years, a copy of a resolution or other action of the governmental unit attesting to this intent.
	f) Grants – a letter from the granting agency as to the availability of funds in terms of the amount and time of receipt.
	g) All Other Funds and Sources – verification of the amount and type of any other funds that will be used for the project.
	TOTAL FUNDS AVAILABLE
APPEND DOCUMENTATION AS <u>ATTACHMENT 34</u>, IN NUMERIC SEQUENTIAL ORDER AFTER THE LAST PAGE OF THE APPLICATION FORM.	

SECTION VIII. 1120.130 - FINANCIAL VIABILITY

All the applicants and co-applicants shall be identified, specifying their roles in the project funding, or guaranteeing the funding (sole responsibility or shared) and percentage of participation in that funding.

Financial Viability Waiver

The applicant is not required to submit financial viability ratios if:

1. "A" Bond rating or better
2. All the project's capital expenditures are completely funded through internal sources
3. The applicant's current debt financing or projected debt financing is insured or anticipated to be insured by MBIA (Municipal Bond Insurance Association Inc.) or equivalent
4. The applicant provides a third-party surety bond or performance bond letter of credit from an A rated guarantor.

See Section 1120.130 Financial Waiver for information to be provided

APPEND DOCUMENTATION AS ATTACHMENT 35, IN NUMERIC SEQUENTIAL ORDER AFTER THE LAST PAGE OF THE APPLICATION FORM.

The applicant or co-applicant that is responsible for funding or guaranteeing funding of the project shall provide viability ratios for the latest three years for which **audited financial statements are available and for the first full fiscal year at target utilization, but no more than two years following project completion.** When the applicant's facility does not have facility specific financial statements and the facility is a member of a health care system that has combined or consolidated financial statements, the system's viability ratios shall be provided. If the health care system includes one or more hospitals, the system's viability ratios shall be evaluated for conformance with the applicable hospital standards.

	Historical 3 Years			Projected
Enter Historical and/or Projected Years:				
Current Ratio				
Net Margin Percentage				
Percent Debt to Total Capitalization				
Projected Debt Service Coverage				
Days Cash on Hand				
Cushion Ratio				

Provide the methodology and worksheets utilized in determining the ratios detailing the calculation and applicable line item amounts from the financial statements. Complete a separate table for each co-applicant and provide worksheets for each.

Variance

Applicants not in compliance with any of the viability ratios shall document that another organization, public or private, shall assume the legal responsibility to meet the debt obligations should the applicant default.

APPEND DOCUMENTATION AS ATTACHMENT 36, IN NUMERICAL ORDER AFTER THE LAST PAGE OF THE APPLICATION FORM.

SECTION IX. 1120.140 - ECONOMIC FEASIBILITY

This section is applicable to all projects subject to Part 1120.

A. Reasonableness of Financing Arrangements

The applicant shall document the reasonableness of financing arrangements by submitting a notarized statement signed by an authorized representative that attests to one of the following:

- 1) That the total estimated project costs and related costs will be funded in total with cash and equivalents, including investment securities, unrestricted funds, received pledge receipts and funded depreciation; or
- 2) That the total estimated project costs and related costs will be funded in total or in part by borrowing because:
 - A) A portion or all the cash and equivalents must be retained in the balance sheet asset accounts to maintain a current ratio of at least 2.0 times for hospitals and 1.5 times for all other facilities; or
 - B) Borrowing is less costly than the liquidation of existing investments, and the existing investments being retained may be converted to cash or used to retire debt within a 60-day period.

B. Conditions of Debt Financing

This criterion is applicable only to projects that involve debt financing. The applicant shall document that the conditions of debt financing are reasonable by submitting a notarized statement signed by an authorized representative that attests to the following, as applicable:

- 1) That the selected form of debt financing for the project will be at the lowest net cost available.
- 2) That the selected form of debt financing will not be at the lowest net cost available but is more advantageous due to such terms as prepayment privileges, no required mortgage, access to additional indebtedness, term (years), financing costs and other factors.
- 3) That the project involves (in total or in part) the leasing of equipment or facilities and that the expenses incurred with leasing a facility or equipment are less costly than constructing a new facility or purchasing new equipment.

C. Reasonableness of Project and Related Costs

Read the criterion and provide the following:

1. Identify each department or area impacted by the proposed project and provide a cost and square footage allocation for new construction and/or modernization using the following format (insert after this page).

COST AND GROSS SQUARE FEET BY DEPARTMENT OR SERVICE									
Department (List below)	A	B	C	D	E	F	G	H	Total Cost (G + H)
	Cost/Square Foot New	Mod.	Gross Sq. Ft. New	Circ.*	Gross Sq. Ft. Mod.	Circ.*	Const. \$ (A x C)	Mod. \$ (B x E)	
Contingency									
TOTALS									

* Include the percentage (%) of space for circulation

D. Projected Operating Costs

The applicant shall provide the projected direct annual operating costs (in current dollars per equivalent patient day or unit of service) for the first full fiscal year at target utilization but no more than two years following project completion. Direct cost means the fully allocated costs of salaries, benefits and supplies for the service.

E. Total Effect of the Project on Capital Costs

The applicant shall provide the total projected annual capital costs (in current dollars per equivalent patient day) for the first full fiscal year at target utilization but no more than two years following project completion.

APPEND DOCUMENTATION AS ATTACHMENT 37, IN NUMERIC SEQUENTIAL ORDER AFTER THE LAST PAGE OF THE APPLICATION FORM.

SECTION X. SAFETY NET IMPACT STATEMENT

SAFETY NET IMPACT STATEMENT that describes all the following must be submitted for ALL SUBSTANTIVE PROJECTS AND PROJECTS TO DISCONTINUE HEALTH CARE FACILITIES [20 ILCS 3960/5.4]:

1. The project's material impact, if any, on essential safety net services in the community, **including the impact on racial and health care disparities in the community**, to the extent that it is feasible for an applicant to have such knowledge.
2. The project's impact on the ability of another provider or health care system to cross-subsidize safety net services, if reasonably known to the applicant.
3. How the discontinuation of a facility or service might impact the remaining safety net providers in each community, if reasonably known by the applicant.

Safety Net Impact Statements shall also include all the following:

1. For the 3 fiscal years prior to the application, a certification describing the amount of charity care provided by the applicant. The amount calculated by hospital applicants shall be in accordance with the reporting requirements for charity care reporting in the Illinois Community Benefits Act. Non-hospital applicants shall report charity care, at cost, in accordance with an appropriate methodology specified by the Board.
2. For the 3 fiscal years prior to the application, a certification of the amount of care provided to Medicaid patients. Hospital and non-hospital applicants shall provide Medicaid information in a manner consistent with the information reported each year to the Illinois Department of Public Health regarding "Inpatients and Outpatients Served by Payor Source" and "Inpatient and Outpatient Net Revenue by Payor Source" as required by the Board under Section 13 of this Act and published in the Annual Hospital Profile.
3. Any information the applicant believes is directly relevant to safety net services, including information regarding teaching, research, and any other service.

A table in the following format must be provided as part of Attachment 37.

Safety Net Information per PA 96-0031			
CHARITY CARE			
Charity (# of patients)	Year	Year	Year
Inpatient			
Outpatient			
Total			
Charity (cost in dollars)			
Inpatient			
Outpatient			
Total			
MEDICAID			
Medicaid (# of patients)	Year	Year	Year
Inpatient			
Outpatient			
Total			
Medicaid (revenue)			
Inpatient			

	Outpatient				
	Total				

APPEND DOCUMENTATION AS ATTACHMENT 38, IN NUMERIC SEQUENTIAL ORDER AFTER THE LAST PAGE OF THE APPLICATION FORM.

SECTION X. CHARITY CARE INFORMATION

Charity Care information **MUST** be furnished for **ALL** projects [1120.20(c)].

1. All applicants and co-applicants shall indicate the amount of charity care for the latest three **audited** fiscal years, the cost of charity care and the ratio of that charity care cost to net patient revenue.
2. If the applicant owns or operates one or more facilities, the reporting shall be for each individual facility located in Illinois. If charity care costs are reported on a consolidated basis, the applicant shall provide documentation as to the cost of charity care; the ratio of that charity care to the net patient revenue for the consolidated financial statement; the allocation of charity care costs; and the ratio of charity care cost to net patient revenue for the facility under review.
3. If the applicant is not an existing facility, it shall submit the facility's projected patient mix by payer source, anticipated charity care expense and projected ratio of charity care to net patient revenue by the end of its second year of operation.

Charity care" means care provided by a health care facility for which the provider does not expect to receive payment from the patient or a third-party payer (20 ILCS 3960/3). Charity Care **must** be provided at cost.

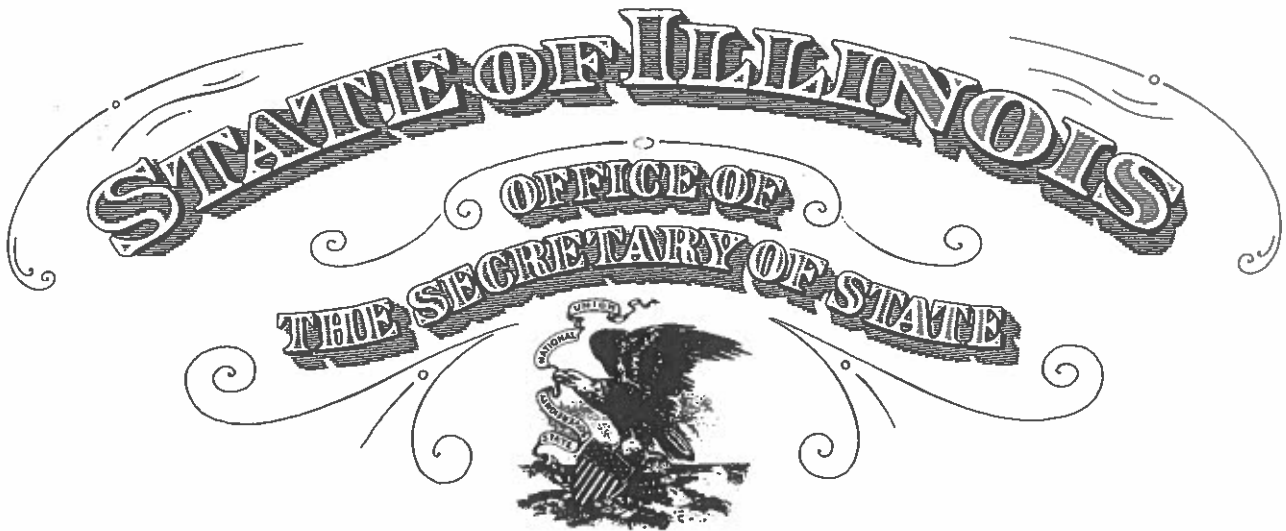
A table in the following format must be provided for all facilities as part of Attachment 39.

CHARITY CARE			
	Year	Year	Year
Net Patient Revenue			
Amount of Charity Care (charges)			
Cost of Charity Care			

APPEND DOCUMENTATION AS **ATTACHMENT 39**, IN NUMERIC SEQUENTIAL ORDER AFTER THE LAST PAGE OF THE APPLICATION FORM.

After paginating the entire completed application indicate, in the chart below, the page numbers for the included attachments:

INDEX OF ATTACHMENTS		
ATTACHMENT NO.		PAGES
1	Applicant Identification including Certificate of Good Standing	26-27
2	Site Ownership	28-32
3	Persons with 5 percent or greater interest in the licensee must be identified with the % of ownership.	
4	Organizational Relationships (Organizational Chart) Certificate of Good Standing Etc.	33
5	Flood Plain Requirements	34
6	Historic Preservation Act Requirements	35
7	Project and Sources of Funds Itemization	36
8	Financial Commitment Document if required	37
9	Cost Space Requirements	38
10	Discontinuation	
11	Background of the Applicant	39-40
12	Purpose of the Project	41-43
13	Alternatives to the Project	44-45
14	Size of the Project	46
15	Project Service Utilization	47
16	Unfinished or Shell Space	48
17	Assurances for Unfinished/Shell Space	48
18	Master Design Projects	
	Service Specific:	
19	Medical Surgical Pediatrics, Obstetrics, ICU	
20	Comprehensive Physical Rehabilitation	
21	Acute Mental Illness	
22	Open Heart Surgery	49-96
23	Cardiac Catheterization	
24	In-Center Hemodialysis	
25	Non-Hospital Based Ambulatory Surgery	
26	Selected Organ Transplantation	
27	Kidney Transplantation	
28	Subacute Care Hospital Model	
29	Community-Based Residential Rehabilitation Center	
30	Long Term Acute Care Hospital	
31	Clinical Service Areas Other than Categories of Service	
32	Freestanding Emergency Center Medical Services	
33	Birth Center	
	Financial and Economic Feasibility:	
34	Availability of Funds	97
35	Financial Waiver	97
36	Financial Viability	97
37	Economic Feasibility	98
38	Safety Net Impact Statement	99-104
39	Charity Care Information	105
	Flood Plain Information	



To all to whom these Presents Shall Come, Greeting:

I, Alexi Giannoulas, Secretary of State of the State of Illinois, do hereby certify that I am the keeper of the records of the Department of Business Services. I certify that

NORTHWESTERN LAKE FOREST HOSPITAL, A DOMESTIC CORPORATION, INCORPORATED UNDER THE LAWS OF THIS STATE ON DECEMBER 10, 1918, APPEARS TO HAVE COMPLIED WITH ALL THE PROVISIONS OF THE GENERAL NOT FOR PROFIT CORPORATION ACT OF THIS STATE, AND AS OF THIS DATE, IS IN GOOD STANDING AS A DOMESTIC CORPORATION IN THE STATE OF ILLINOIS.



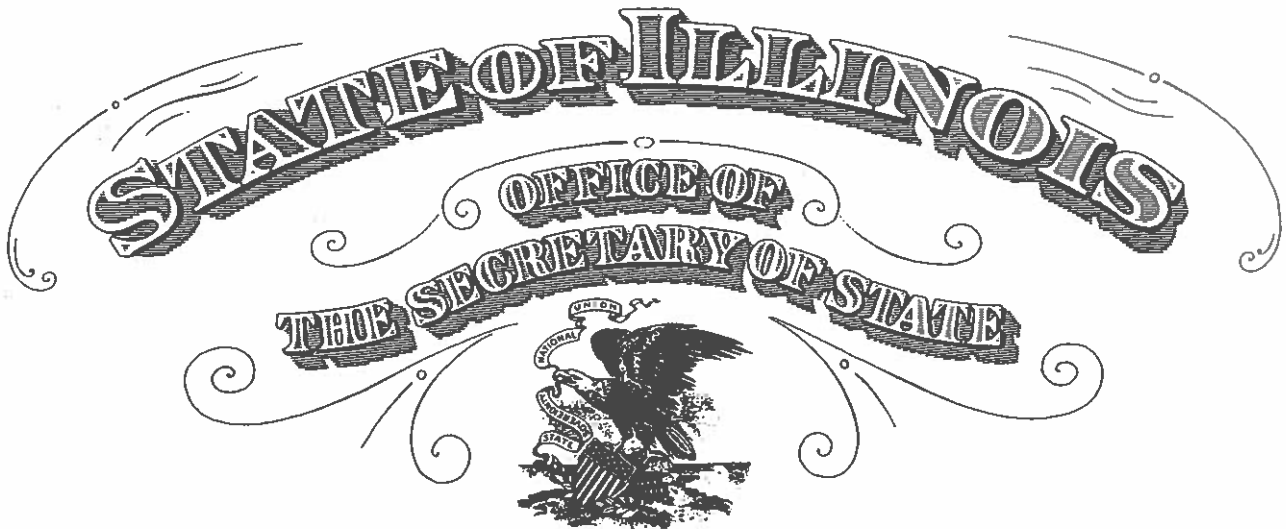
In Testimony Whereof, I hereto set my hand and cause to be affixed the Great Seal of the State of Illinois, this 3RD day of JUNE A.D. 2025 .

Authentication #: 2515403410 verifiable until 06/03/2026

Authenticate at: <https://www.ilsos.gov>

Alexi Giannoulas

SECRETARY OF STATE



To all to whom these Presents Shall Come, Greeting:

I, Alexi Giannoulas, Secretary of State of the State of Illinois, do hereby certify that I am the keeper of the records of the Department of Business Services. I certify that

NORTHWESTERN MEMORIAL HEALTHCARE, A DOMESTIC CORPORATION, INCORPORATED UNDER THE LAWS OF THIS STATE ON NOVEMBER 30, 1981, APPEARS TO HAVE COMPLIED WITH ALL THE PROVISIONS OF THE GENERAL NOT FOR PROFIT CORPORATION ACT OF THIS STATE, AND AS OF THIS DATE, IS IN GOOD STANDING AS A DOMESTIC CORPORATION IN THE STATE OF ILLINOIS.



In Testimony Whereof, I hereto set my hand and cause to be affixed the Great Seal of the State of Illinois, this 19TH day of NOVEMBER A.D. 2024 .

Authentication #: 2432402364 verifiable until 11/19/2025

Authenticate at: <https://www.ilsos.gov>

Alexi Giannoulas

SECRETARY OF STATE

BLANKS 100,000
(NEW REG. 1980)
JANUARY DEED-Statutory
(INDIVIDUAL TO CORPORATION)
Approval By Chicago Title and Trust Co.
(Chicago Real Estate Board)
S-3 1 of 2

1934994
1942003
1934994
(The Above Space For Recorder's Use Only)

410137 Lake
THE GRANTOR William J. Halligan, Jr. and Marydith Halligan,
his wife
of the City of Lake Forest County of Lake State of Illinois
for and in consideration of TEN and no/100----- (\$10.00) DOLLARS,
and other valuable consideration in hand paid,
CONVEY and WARRANT to Lake Forest Hospital, an Illinois corpora-
tion of Lake Forest, Illinois
a corporation created and existing under and by virtue of the Laws of the State of Illinois
having its principal office in the City of Lake Forest and
State of Illinois the following described Real Estate situated in the County
of Lake in the State of Illinois, to wit:

Exhibit A attached hereto and made a part hereof.

071558
STATE OF ILLINOIS
REAL ESTATE TRANSFER TAX
JUL 31 '78 DEPT. OF REVENUE
\$900.00

071551
STATE OF ILLINOIS
REAL ESTATE TRANSFER TAX
JUL 31 '78 DEPT. OF REVENUE
\$857.00

Grantee's Address: Lake Forest Hospital, 660 Westmorland, Lake Forest
Illinois

hereby releasing and waiving all rights under and by virtue of the Homestead Exemption Law of
the State of Illinois.

DATED this 30th day of June 1978

PLEASE PRINT OR TYPE NAME(S) BELOW SIGNATURE(S)
William J. Halligan, Jr. (Seal)
Marydith Halligan (Seal)

State of Illinois, County of Cook ss., I, the undersigned, a Notary Public in
and for said County, in the State aforesaid, DO HEREBY CERTIFY that
William J. Halligan, Jr. and Marydith Halligan,
his wife
personally known to me to be the same persons whose names are
subscribed to the foregoing instrument appeared before me this day in
person, and acknowledged that they signed, sealed and delivered the said
instrument as their free and voluntary act, for the uses and purposes
therein set forth, including the release and waiver of the right of homestead.

Given under my hand and official seal, this 14th day of July 1978
Commission expires 4/11 1979
THOMAS J. KELLY NOTARY PUBLIC

Prepared by:
Thomas J. Kelly
Pedersen & Houpt
Suite 3400

ADDRESS OF PROPERTY:

NAME
ADDRESS 180 North LaSalle Street
CITY AND STATE Chicago, Illinois

THE ABOVE ADDRESS IS FOR STATISTICAL
PURPOSES ONLY AND IS NOT A PART OF
THIS DEED.

SEND SUBSEQUENT TAX BILLS TO:

THIS INSTRUMENT IS REACKNOWLEDGED AND RECORDED IN ORDER TO SHOW THE
CONSOLIDATION PAID.

APPROPRIATE "RIDE" OR REVENUE ST

DOCUMENT NUMBER

1934994
DOC
LAKE COUNTY, ILLINOIS

'78 JUL 31 PM 2 43

Frank J. Quatra
RECORDER OF DEEDS

1942903

DOC
LAKE COUNTY, ILLINOIS

'78 AUG 29 AM 11 17

Frank J. Quatra
RECORDER OF DEEDS

Mail to:

CHICAGO TITLE AND TRUST COMPANY
111 WEST WASHINGTON
CHICAGO, ILLINOIS 60602
ATTN: J. WERLE LL50

34313F

STATE OF ILLINOIS)
) SS
COUNTY OF COOK)

I, the undersigned, a Notary Public in and for said County, in the State aforesaid, DO HEREBY CERTIFY that William J. Halligan, Jr. and Marydith Halligan, his wife, personally known to me to be the same persons whose names are subscribed to the foregoing instrument appeared before me this day in person and acknowledged that they signed, sealed and delivered the said instrument as their free and voluntary act, for the uses and purposes therein set forth, including the release and waiver of the right of homestead.

Given under my hand and official seal, this 15th day of August, 1978.

1942903

William J. Halligan, Jr.

My Commission Expires 6/24/80

PARCEL 1:

That part of the West half of Section 29, Township 44 North, Range 12, East of the 3rd P.M., described as follows: The South 18.79 acres lying South of a line drawn parallel with the South line of the West half of the South West quarter of said Section 29, (except that part thereof lying Easterly of the Westerly line of Skokie Highway, according to the plat of Dedication, therefore recorded as Document 418857, on November 18, 1935), in Lake County, Illinois.

PARCEL 2:

The West half of the South West quarter of Section 29, Township 44 North, Range 12, East of the 3rd P.M., (except that part thereof lying Easterly of the Westerly line of Skokie Highway, according to the plat of Dedication, therefore recorded as Document 418857, on November 18, 1935 and also except the South 18.79 acres thereof, lying South of a line parallel with the South line of said West half of the South West quarter), in Lake County, Illinois.

PARCEL 3:

That part of the North West quarter of Section 29, and the North East quarter of Section 30, all in Township 44 North, Range 12, East of the 3rd P.M., described as follows: Beginning at the South East corner of said North East quarter of Section 30; thence West along the South line of said North East quarter of Section 30, 1452.00 feet; thence North 13 degrees West 149.82 feet; thence East parallel with said South line of the North East quarter of Section 30, 1485.59 feet, more or less, to the East line of the North East quarter aforesaid; thence East parallel with the South line of said North West quarter of Section 29, 941.75 feet, more or less, to the Westerly line of Skokie Highway, according to the plat of Dedication therefore, recorded as Document 418857, on November 18, 1935; thence Southerly along said Westerly line of Skokie Highway 147.30 feet, more or less, to said South line of the North West quarter of Section 29, and thence, West along said South line of the North West quarter of Section 29, 960.60 feet, more or less, to the corner of beginning, in Lake County, Illinois.

1942003

PARCEL 4:

That part of the North half of the South East quarter of Section 30, Township 44 North, and Range 12, East of the 3rd P.M., lying Easterly of the Easterly line of the public highway known as Waukegan Road, except that part thereof described as follows: Beginning at a point on the Easterly line of the public highway known as Waukegan Road 341.00 feet Northerly of the South line of said North half of the South East quarter of Section 30, (measured along said Easterly line of Waukegan Road) and; thence, Northerly along said Easterly line of Waukegan Road 350.00 feet; thence Easterly along a line perpendicular to said Easterly line of Waukegan Road, 376.61 feet; thence Southerly parallel with said Easterly line of Waukegan Road, 350.00 feet; and thence Westerly along the line perpendicular to said Easterly line of Waukegan Road 376.61 feet to the place of beginning, in Lake County, Illinois.

THIS INSTRUMENT WAS PREPARED BY:

111 West Washington Street
Chicago, Illinois 60602

Thomas Szymczyk
% Chicago Title and Trust Company
630-2168

2523020



ER 0 Mail
RELEASE DEED

F. 1699 R. 12/73

THE ABOVE SPACE FOR RECORDERS USE ONLY

2523020
RECORDED
LAKE COUNTY, ILLINOIS
1987 JAN -7 AM 9:12

Frank J. Kustra

KNOW ALL MEN BY THESE PRESENTS, That CHICAGO TITLE AND TRUST COMPANY, a
corporation of the State of Illinois, as
Trustee

in consideration of one dollar, and other good and valuable considerations, the receipt whereof is hereby
acknowledged, does hereby release, convey and quit-claim unto

Lake Forest Hospital, not for profit,
the heirs, legal representatives and assigns of the grantee or grantees herein, (or if the grantee is a
corporation, its successors and assigns) all the right, title, interest, claim or demand whatsoever it may have
acquired in, through or by a certain Trust Deed, recorded in the Recorder's Office of
Lake County, in the State of Illinois, as Document Number 1934995 ,

in book , page , to the premises situated in the said County, State of Illinois,
described as follows, to-wit:

PARCEL 1:

The West half of the South West quarter of Section 29, Town-
ship 44 North, Range 12, East of the 3rd P.M., (except that
part thereof lying Easterly of the Westerly line of Skokie
Highway, according to the plat of Dedication, therefore re-
corded as Document 418857, on November 18, 1935 and also
except the South 18.79 acres thereof, lying South of a line
parallel with the South line of said West half of the South
West quarter), in Lake County, Illinois.

PARCEL 2:

That part of the North West quarter of Section 29, and the
North East quarter of Section 30, all in Township 44 North,
Range 12, East of the 3rd P.M., described as follows: Beginning
at the South East corner of said North East quarter of Section
30; thence West along the South line of said North East quarter
of Section 30, 1452.00 feet; thence North 13 degrees West
149.82 feet; thence East parallel with said South line of the
North East quarter of Section 30, 1485.59 feet, more or less,
to the East line of the North East quarter aforesaid; thence
East parallel with the South line of said North West quarter
of Section 29, 941.75 feet, more or less, to the Westerly line
of Skokie Highway, according to the plat of Dedication therefore,
recorded as Document 418857, on November 18, 1935; thence
Southerly along said Westerly line of Skokie Highway 147.30
feet, more or less, to said South line of the North West
quarter of Section 29, and thence, West along said South line
of the North West quarter of Section 29, 960.60 feet, more or
less, to the corner of beginning, in Lake County, Illinois.

PARCEL 3:

2523020

That part of the North half of the South East quarter of Section
30, Township 44 North, and Range 12, East of the 3rd P.M., lying
Easterly of the Easterly line of the public highway known as
Waukegan Road, except that part thereof described as follows:
Beginning at a point on the Easterly line of the public highway
known as Waukegan Road 341.00 feet Northerly of the South line of
said North half of the South East quarter of Section 30, (measured
along said Easterly line of Waukegan Road) and; thence, Northerly
along said Easterly line of Waukegan Road 350.00 feet; thence
Easterly along a line perpendicular to said Easterly line of
Waukegan Road, 376.61 feet; thence Southerly parallel with said
Easterly line of Waukegan Road, 350.00 feet; and thence
Westerly along the line perpendicular to said Easterly line of
Waukegan Road 376.61 feet to the place of beginning, in Lake
County, Illinois.

CHICAGO TITLE INSURANCE CO.

KN
COIin
aclthe
co:
accin
de

together with all the appurtenances and privileges thereunto belonging or appertaining.

IN WITNESS WHEREOF, Said CHICAGO TITLE AND TRUST COMPANY, as Trustee as aforesaid, has caused these presents to be signed by its Assistant Vice-President, and attested by its Assistant Secretary, and its corporate seal to be hereto affixed.

(Date) December 30, 1986

CHICAGO TITLE AND TRUST COMPANY
as Trustee as aforesaid,

By

Attest



Assistant Vice-President

Assistant Secretary

**FOR THE PROTECTION OF THE
OWNER, THIS RELEASE SHALL
BE FILED WITH THE RECORDER
OF DEEDS IN WHOSE OFFICE
THE MORTGAGE OR DEED OF
TRUST WAS FILED.**

STATE OF ILLINOIS, } ss.
COUNTY OF COOK

I, the undersigned, a Notary Public in and for the County and State aforesaid, DO HEREBY CERTIFY, that the above named Assistant Vice President and Assistant Secretary of the CHICAGO TITLE AND TRUST COMPANY, Grantor, personally known to me to be the same persons whose names are subscribed to the foregoing instrument as such Assistant Vice President and Assistant Secretary respectively, appeared before me this day in person and acknowledged that they signed and delivered the said instrument as their own free and voluntary act and as the free and voluntary act of said Company for the uses and purposes therein set forth; and the said Assistant Secretary then and there acknowledged that said Assistant Secretary, as custodian of the corporate seal of said Company, caused the corporate seal of said Company to be affixed to said instrument as said Assistant Secretary's own free and voluntary act and as the free and voluntary act of said Company for the uses and purposes therein set forth.

Given under my hand and Notarial Seal

Date 12/30/86

Notary Public

Diane Helms

NAME Wilson & McIlvaine
STREET ATTN: B. Adler
135 S. La Salle Street
CITY Chicago, Il 60603

OR

FOR INFORMATION ONLY
INSERT STREET ADDRESS OF ABOVE
DESCRIBED PROPERTY HERE

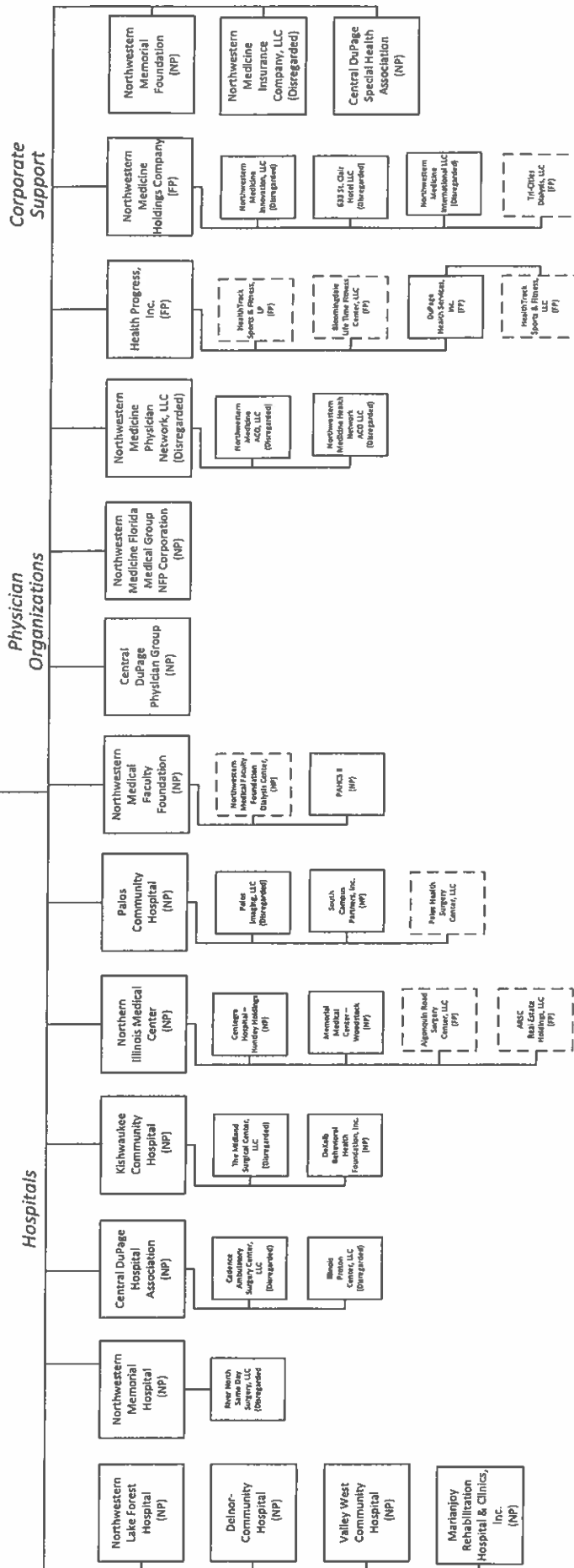
"OFFICIAL SEAL"
Diane Helms

Notary Public
My Commission Expires 10/2/87

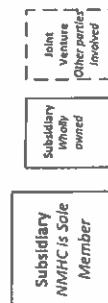
INSTRUCTIONS

RECORDER'S OFFICE BOX NUMBER

Northwestern Memorial HealthCare



Effective February 16, 2024



Flood Plain Requirements

Not Applicable – the proposed project is for the establishment of Open Heart Surgery at an existing facility. There is no construction or modernization associated with this project.

Historic Resources Preservation Act Requirements

Not Applicable – the proposed project does not involve the demolition of any structures, construction of a new building, or modernization of an existing building.

Project Costs and Sources of Funds

Line 10 – Movable Capital Equipment – (\$2,840,000) – this includes:

The only costs associated with the proposed project are the following equipment items:

Equipment	Approx. Cost
Heart Lung Machines & Monitors	\$1,222,000
Ultrasound Scanners	\$511,000
Instrumentation	\$330,000
Balloon Pumps	\$181,000
Cardiac Output & Cerebral Oximeter Monitors	\$171,000
Heater Cooler Units	\$146,000
Slush Machines	\$116,000
Defibrillators	\$72,000
Cell Washers	\$44,000
Lab Analyzers, POCT	\$27,000
Hyper-Hypothermia Units	\$20,000
TOTAL	\$2,840,000

Project Status and Completion Schedules

Anticipated first patient surgery: November 2026

Anticipated project completion date: March 31, 2027

Northwestern Memorial HealthCare Open CON/COE Permits

CON #21-008: NM Old Irving Park Medical Office Building

CON #22-046: NM Bronzeville Medical Office Building

CON #22-047: NM Lake Forest Hospital Expansion

CON #24-006: NM Cancer Center Warrenville

CON #24-027: NM Huntley Medical Office Building

CON #24-039: NM Surgery Center Sycamore – Addition of GI

CON #25-025: NMH New Tower Master Design Project

CON #25-030: NMH Galter 14/15 Beds Project

Cost Space Requirements

Not Applicable – the proposed project is for the establishment of Open Heart Surgery at NM Lake Forest Hospital. There is no construction or modernization associated with this project.

SECTION III. BACKGROUND, PURPOSE OF THE PROJECT, AND ALTERNATIVES – INFORMATION REQUIREMENTS

Criterion 1110.110(a)

BACKGROUND OF APPLICANT

A listing of all health care facilities owned or operated by the applicants, including licensing, and certification if applicable.

Northwestern Memorial HealthCare Facilities	IDPH License #	Joint Commission Organization #
Northwestern Memorial Hospital	0003251	7267
Northwestern Lake Forest Hospital d/b/a Northwestern Medicine Lake Forest Hospital	0005660	3918
Central DuPage Hospital Association d/b/a Northwestern Medicine Central DuPage Hospital	0005744	7444
Delnor-Community Hospital d/b/a Northwestern Medicine Delnor Hospital	0005736	5291
Marianjoy Rehabilitation Hospital & Clinics, Inc. d/b/a Northwestern Medicine Marianjoy Rehabilitation Hospital	0003228	7445
Kishwaukee Community Hospital d/b/a Northwestern Medicine Kishwaukee Hospital	0005470	7325
Valley West Community Hospital d/b/a Northwestern Medicine Valley West Hospital	0004690	382957
Northern Illinois Medical Center d/b/a Northwestern Medicine McHenry Hospital	0003889	7375
Northern Illinois Medical Center d/b/a Northwestern Medicine Huntley Hospital	0003889 Site #0003890	7375
Memorial Medical Center d/b/a Northwestern Medicine Woodstock Hospital	0003889 Site #0004606	7447
Palos Community Hospital d/b/a Northwestern Medicine Palos Hospital	0003210	7306
Northwestern Medicine Emergency Center Grayslake	22002	3918
Northwestern Grayslake Ambulatory Surgery Center	7003156	n/a
Northwestern Grayslake Endoscopy Center	7003149	n/a
Cadence Ambulatory Surgery Center, LLC d/b/a Northwestern Medicine Surgery Center Warrenville	7003173	n/a
The Midland Surgical Center, LLC d/b/a Northwestern Medicine Surgery Center Sycamore	7003148	n/a
River North Same Day Surgery, LLC d/b/a Northwestern Medicine Surgery Center River North	7002090	n/a
Palos Health Surgery Center, LLC*	7003224	n/a

*denotes partial ownership > 50%

A certified listing of any adverse action taken against any facility owned and/or operated by the applicants, directly or indirectly, during the three years prior to the filing of the application.

By the signatures on the Certification pages of this application, the Applicants attest that no adverse action has been taken against any facility owned and/or operated by Northwestern Memorial HealthCare during the three years prior to the filing of this application. For the purpose of this letter, the term "adverse action" has the meaning given to it in the Illinois Administrative Code, Title 77, Section 1130.140.

Authorization permitting HFSRB and DPH access to any documents necessary to verify the information submitted, including, by not limited to: official records of DPH or other State agencies; the licensing or certification records of other states, when applicable; and the records of nationally recognized accreditation organizations.

By the signatures on the Certification pages of this application, the Applicants authorize HFSRB and DPH to access any documentation which it finds necessary to verify any information submitted, including, but not limited to official records of DPH or other State agencies and/or the records of nationally recognized accreditation organizations.

Criterion 1110.110(b)

PURPOSE OF PROJECT

1. *Document that the project will provide health services that improve the health care or well-being of the market area population to be served.*

Northwestern Medicine Lake Forest Hospital (NM LFH) has an extensive history of caring for the community. Founded in 1899 as Alice Home on the campus of Lake Forest College, NM LFH joined Northwestern Medicine in 2010 and opened a new state-of-the-art replacement hospital building in 2018. Just five years later, in 2023, NM LFH received approval to double the number of medical/surgical beds in response to a significant increase in both inpatient volumes as well as acuity levels at NM LFH.

Since the affiliation with Northwestern Medicine in 2010, NM LFH has continued to build advanced care capabilities in areas such as Heart and Vascular, as well as other specialties. Since the affiliation, Northwestern Medicine Bluhm Cardiovascular Institute has provided highly specialized cardiovascular care at NM LFH, leading to an increase in both volume as well as acuity of cardiovascular procedures.

The proposed project will improve access to comprehensive cardiovascular care within the NM LFH planning area. Access to comprehensive, quality healthcare services is important for the achievement of optimal health and increasing quality of life. The establishment of a cardiac surgery program at NM LFH will allow NM patients to receive world-class cardiovascular care closer to where they live instead of having to travel to another NM facility.

2. *Define the planning area or market area, or other relevant area, per the applicant's definition.*

The planning area for this project is a 20-mile radius of NM LFH. In CY24, 92.3% of patients admitted to NM LFH came from this area with almost 1/3 coming from under-resourced zip codes.

3. *Identify the existing problems or issues that need to be addressed as applicable and appropriate for the project.*

After decades of decline in cardiovascular disease rates, more recent trends are moving up, attributed in part to worsening risk factors such as diabetes, population aging, health inequities, and other factors. According to the American Heart Association, deaths attributable to diseases of the heart started increasing in the later 2010s and have continued to climb in the 2020s. More people died of cardiovascular-related causes in 2020, the first year of the COVID-19 pandemic,

than in any year since 2003. It is estimated that roughly 127.9 million Americans (48.6%) aged 20 years or greater have cardiovascular disease, including coronary heart disease, heart failure, stroke, or hypertension with more than 50% of males and 43% of females that same age having hypertension.

According to the CDC, diseases of the heart is the leading cause of death for Americans with 21.4% of all deaths reported due to cardiovascular disease. Similarly, according to IDPH, heart disease is the leading cause of death and also a major cause of disability in Illinois. In 2021, there were 26,280 deaths in Illinois due to heart disease. Deaths due to heart disease and stroke combined represented almost 27% of all deaths in Illinois in 2021. Illinois is slightly above the national average of 165.0 heart disease deaths per 100,000 population with 165.3 deaths per 100,000 population, ranking 21st out of the 50 states.

Almost 40% of respondents for NM LFH's 2022 CHNA report identified cardiovascular disease as a major problem. Prevalence of heart disease for NM LFH's CSA is 7.1% of surveyed adults compared to 5.7% of adults in Illinois.

Without an open heart surgery program, NM LFH cannot provide continuous care to cardiovascular patients. NM patients have to travel outside of their communities for their cardiovascular surgical care, specifically to NMH (27 miles away) or NM McHenry (21 miles away). This can lead to challenges with transportation and consistent follow-up care. Longer distances can cause increased logistical and transportation costs for patients and families, making comprehensive cardiac care less accessible. In CY23, 311 patients were referred to either NMH or NM McHenry for cardiac surgery or a procedure requiring cardiac back-up following a cardiac catheterization procedure at NM LFH. In CY24, the number of patients referred to another NM hospital increased to 320. In the first 5 months of CY25, 135 patients were referred to either NMH or NM McHenry (annualized to 355).

Additionally, the highly skilled BCVI interventional cardiologists cannot perform all of their cases at NM LFH due to the lack of surgical backup. Likewise, patients are unable to receive the most advanced minimally invasive procedures, such as Transcatheter Aortic Valve Replacement (TAVR) which has grown by 41% in the last ten years because such procedures are prohibited without full open heart surgical back up. By offering cardiac surgery at NM LFH, patient will receive the highest quality care by their physician of choice and avoid unnecessary risk.

4. *Sources of information include:*

- Hospital Records
- Centers for Disease Control (CDC)
- American Heart Association 2024 Heart Disease and Stroke Statistics: A Report of US and Global Data
- NM Lake Forest Hospital 2022 CHNA Report

5. *Detail how the project will address or improve the previously referenced issues, as well as the populations health status and well-being.*

Proximity to a hospital with cardiac surgery capabilities can significantly impact outcomes in cardiovascular emergencies. When a patient experiences a heart attack, stroke, or other acute cardiovascular events, timely access to medical care is crucial. Studies have shown that the quicker a patient receives appropriate treatment—such as medications, interventions, or surgical procedures—the better their chances of survival and recovery. For instance, in the case of myocardial infarctions (heart attacks), every minute counts, as delays in treatment can lead to increased heart damage and higher mortality risk. Therefore, living closer to a healthcare facility with cardiac surgery capabilities can be a vital factor in the timely response needed during cardiovascular emergencies, ultimately influencing patient outcomes.

Northwestern Medicine Bluhm Cardiovascular Institute (BCVI) is a renowned center located at Northwestern Memorial Hospital in Chicago, Illinois. It is affiliated with Northwestern University and focuses on providing comprehensive cardiovascular care, including prevention, diagnosis, and treatment of heart and vascular diseases. The institute is known for its advanced research, cutting-edge technology, and a multidisciplinary approach to patient care. It offers a variety of services, including cardiac surgery, interventional cardiology, electrophysiology, and heart failure management, among others. In addition to clinical services, BCVI is involved in medical research and education, contributing to advancements in cardiovascular medicine. Since 2010, BCVI has been working to enhance cardiovascular care at NM LFH. Approval of this project will allow greater access to a more comprehensive cardiovascular program for NM patients living within a 20-mile radius of NM LFH.

6. *Provide goals with quantified and measurable objectives, with specific timeframes that relate to achieving the stated goals as appropriate.*

The goal of this project is to increase access to comprehensive cardiovascular services at NM LFH to reduce out-migration to NM hospitals in other planning areas for cardiac surgery. If this project is approved, NM LFH projects to perform 250 cardiac surgeries in CY28.

Criterion 1110.110(d)

ALTERNATIVES

Proposed Project

NM LFH proposes the establishment of an open heart surgery program. The open heart surgeries will be performed in the existing operating rooms with the purchase of additional equipment totaling \$2,840,000.

One of the most significant advantages of this project is that the Northwestern Medicine Bluhm Cardiovascular Institute (BCVI) at NM LFH has been well established and is comprised of highly skilled physicians committed to providing outstanding comprehensive cardiovascular care. NM LFH currently provides a full array of cardiovascular care including diagnostic testing, diagnostic cardiac imaging (CT angiograms, Cardiac MR, Cardiac PET), interventional cardiac catheterizations, electrophysiology, and vascular procedures.

The project will improve accessibility for patients, physicians, and medical personnel and will allow patients to receive the best possible cardiovascular care closer to home. The project will provide a better option for patients who otherwise have to be referred to either NMH or NM McHenry for cardiac surgery or a procedure requiring cardiac back-up following a cardiac catheterization procedure at NM LFH.

The proposed project is the only option for increasing access to critical cardiovascular services for patients within the 20-mile radius of NM LFH and aligns with NM's commitment to provide world-class care closer to where patients live and work. The proposed project can improve patient outcomes and ensures a healthier community.

The following alternative to the project was considered:

1. Maintain Status Quo / Do Nothing

Alternative 1: Maintain Status Quo / Do Nothing

Description

Continue to refer patients to either NMH or NM McHenry for cardiac surgery or for a procedure requiring cardiac back-up following a cardiac catheterization procedure at NM LFH.

Advantages

- No capital costs to implement

Disadvantages

- As mentioned above, NM LFH currently provides full breadth and depth of cardiovascular care and has exceeded the required 750 cardiac catheterizations

for the past 9 years. Large cardiac catheterization programs, like the one at NM LFH, should ideally have cardiovascular surgery capability to provide comprehensive cardiovascular care, ensure continuity of care, increase provider collaboration, streamline patient flow, and enhance patient outcomes.

- Without an open heart surgery program at NM LFH, patients will have to continue to travel outside of their communities for their care, most having to travel downtown to Northwestern Memorial Hospital (27 miles away) or to NM McHenry Hospital (21 miles away). This can lead to challenges with transportation and consistent follow-up care. Longer distances can cause increased logistical and transportation costs for patients and families, making comprehensive cardiac care less accessible.
- Proximity to a healthcare facility plays a critical role in determining outcomes for patients experiencing cardiovascular emergencies. Timely access to medical care is essential during events such as heart attacks or strokes. BCVI at NM LFH offers a comprehensive and specialized cardiac care program, equipped with vital resources for effective treatment. Residing closer to a healthcare facility that offers open heart surgery can be a crucial element in ensuring prompt responses during cardiovascular emergencies, improving the chances of positive outcomes for patients.

This alternative was rejected because it does not increase access to cardiovascular surgery for NM patients.

The following table provides a summary cost benefit analysis of the preferred project and the alternative:

Location/Alternative	Meets functional program?	Total Cost	Availability
Establish Open Heart Surgery at NM LFH (preferred option)	Yes	\$2.8 million	2026
Maintain Status Quo / Do Nothing	No	\$0	N/A

SECTION IV. PROJECT SCOPE, UTILIZATION, AND UNFINISHED/SHELL SPACE

Criterion 1110.120

SIZE OF PROJECT

Not Applicable – there is no construction or modernization associated with the proposed project.

PROJECT SERVICES UTILIZATION

Document that in the second year of operation, the annual utilization of the service or equipment shall meet or exceed the utilization standards specified in 1110. Appendix B.

The open heart surgery program at NM LFH will meet the minimum utilization standard of 200 cases per year within 2 years.

From CY14 – CY24, cardiac catheterizations at NM LFH increased by 349% (average annual increase of 34.9%).

Cardiac	CY14	CY15	CY16	CY17	CY18	CY19	CY20	CY21	CY22	CY23	CY24
Catheterizations	598	706	908	977	1,136	1,206	1,287	1,770	2,056	2,461	2,684

Projecting a much lower rate of just 5% growth per year through CY28, NM LFH projects 3,219 cardiac catheterizations in CY28.

Cardiac	CY25	CY26	CY27	CY28
Catheterizations	2,809	2,939	3,076	3,219

In CY24, 320 patients were referred to either NMH or NM McHenry for cardiac surgery or a procedure requiring cardiac back-up following a cardiac catheterization procedure at NM LFH, or 11.9% of the 2,684 cardiac catheterizations. This rate is consistent with the prior year which was 12.6%.

Assuming 12% of LFH cardiac catheterizations will require cardiac surgery, NM LFH projects 370 cardiac surgery referrals in CY27 and 386 cardiac surgery referrals in CY28 based on the number of projected cardiac catheterizations at NM LFH. Assuming 65% of those referral surgeries will be performed at NM LFH, NM LFH projects 240 cardiac surgeries in CY27 and 250 in CY28.

Department	Historical Utilization CY23	Historical Utilization CY24	Projected Utilization CY27	Projected Utilization CY28	State Standard	Met Standard?
Cardiac Surgery (cases)	N/A	N/A	240	250	200	Yes

UNFINISHED OR SHELL SPACE

Not Applicable – there is no unfinished or shell space planned in the project.

SECTION VI. SERVICE SPECIFIC REVIEW CRITERIA

D. Criterion 1110.220 – Open Heart Surgery

1110.220(b)(1) – Peer Review

NM Lake Forest Hospital has a robust multi-disciplinary peer review process that is managed by the Medical Staff Office. If this project is approved, NM LFH will also establish a multidisciplinary cardiac surgery quality committee that will review cardiac surgery program performance and ensure that there are continual reviews and improvements related to patient care, workflows, best practices, patient safety, and outcomes.

The Cardiac Surgery Quality Committee will be chaired by the Medical Director of the Cardiovascular Surgery program. They will meet monthly and will include, but not limited to the following members:

- Cardiac Surgeons
- Cardiac Anesthesiologist(s)
- Perfusionist
- Medical Director, Intensive Care Unit
- Directors (Intensive Care Unit, Operating Rooms, Ambulatory Clinic, Interventional labs)
- Cardiologist (General Cardiology and Interventionalist)
- Case Manager/Social Worker
- Nutrition
- Physical Therapy
- Cardiopulmonary Rehabilitation
- Respiratory Therapy
- Clinical Documentation Team (CDI)
- Infection Control
- Quality Improvement Leader
- Chief Medical Officer
- Managers (Operating Rooms, ICU, Cardiac Step Down, Ambulatory Clinic, Interventional labs)
- Vice President of Operations, Cardiology
- Inpatient nurse educators

The Cardiac Surgery program at NM LFH will participate in the Society of Thoracic Surgeons (STS) National Adult Cardiac Surgery database, to benchmark performance at the local and national level. The benchmarking data provided by STS will be reviewed at the monthly Cardiac Surgery Quality meetings where the team will use this information to drive clinical quality improvement and/or sustainability as it relates to patient safety and outcomes. The data for the STS database will be collected according to STS requirements and incorporated into the national database.

The Cardiac Surgery Quality Committee will develop a Cardiac Surgery performance scorecard, similar to one that is used across all NM locations, that will be reviewed and updated quarterly. The performance improvement scorecard will include but not limited to the following quality indicators:

- Risk adjusted mortality rates
- Readmissions
- Deep sternal infection
- Prolonged intubation (ventilation)
- Renal failure
- Permanent stroke
- Reoperation
- Medication Composite (beta blockade, anti-lipid)
- Use of internal mammary artery
- Discharge to home
- Length of stay

Quarterly reports detailing performance data and improvement activities will be submitted to the Northwestern Medicine System Cardiac Surgery Department meeting.

1110.220(b)(2) – Establishment of Open-Heart Surgery

Background

Northwestern Medicine Bluhm Cardiovascular Institute (BCVI) is comprised of highly skilled physicians committed to providing outstanding cardiovascular comprehensive care. Through the integration of education and research, the patient-focused multidisciplinary team of specialists addresses each patient's individual needs. NM LFH currently provides a full breadth and depth of cardiovascular care including diagnostic testing, diagnostic cardiac imaging (CT angiograms, Cardiac MR, Cardiac PET), interventional cardiac cath, electrophysiology, and vascular procedures.

In addition, NM LFH established a robust IV infusion clinic to support heart failure patients in the ambulatory setting, and other transitional care pathways for patients from discharge to their follow up appointment. NM LFH was the first hospital in the NM system to create a chest pain pathway in collaboration with the emergency department. If a patient presents with a HEART score < 6 they can be discharged for outpatient follow-up care. This has significantly reduced the need for inpatient admissions and provides patients the ability to safely follow-up as an outpatient.

NM LFH has a strong link to Northwestern University and has participated in clinical trials such as:

- (PEA-Valve) Phono and Electrocardiogram Assisted Detection of Valvular Heart Disease: the primary goal of this study was to refine and validate algorithms for the accurate identification of valvular heart disease using deidentified datasets as recorded heart sounds and ECGs. Data obtained was then compared and

validated via gold-standard echocardiograms. The focus of this study was: can a machine learning algorithm derived from simultaneous phono- and electrocardiogram recordings reliably diagnose clinically important (1) aortic stenosis and (2) mitral regurgitation utilizing electronic stethoscopes. The stethoscopes and the algorithm have been FDA approved and are currently in their final iteration.

- *GORE GSO 18-01 (REDUCE PAS): Gore Cardioform Septal Occluder:* permanently implanted device indicated for percutaneous, transcatheter closure of PFOs in patients with a history of cryptogenic stroke. The study aims to assess the safety and efficacy of the GSO device and to evaluate the quality of operator education, training, and transferability of trial experience to a post market setting. Procedures are performed in an NMH cath lab and patients managed at either LFH or NMH.
- *(REACT-AF) Rhythm, Evaluation AntiCoagulaTion with Continuous Monitoring of Atrial Fibrillation:* the purpose of this study is to assess whether it is safe and effective for patients with atrial fibrillation (afib) to discontinue the use of oral anticoagulation medications during prolonged periods of normal heart rhythm. The study is an NIH-funded clinical trial in collaboration with Johns Hopkins, Stanford, and the University of California San Francisco, with a primary end goal of reducing a patient's risk of bleeding, while maintaining stroke protections. This is a randomized prospective that seeks to enroll greater than 5,000 patients over the duration of the study. Patients are randomized into 1 of 2 groups: control arm (standard of care - DOAC maintained) or experimental arm (AppleWatch dispensed - intermittent use of DOAC).

Because of the exceptional outcomes at NM LFH, BCVI at NM LFH has achieved the following awards/designations:

- Get With The Guidelines Heart Failure Gold Plus, Target: Heart Failure Honor Roll
- NCDR Chest Pain – MI Registry, Platinum Performance Achievement Award (no longer participating but achieved this award for 5 years in a row before ending participation)
- AMI Mortality CMS Performance - Top Decile performance.
- Heart Failure Mortality CMS Performance – Top Decile performance.
- U.S. News & World Report 2024-2025 – High Performing Hospital – Heart Failure
- U.S. News & World Report 2024-2025 – Average Performing Hospital – Heart Attack

Establishment of Open Heart Surgery Category of Service

NM LFH meets both criteria for determining the need for an open heart surgery category of service per Section 1100.610:

1. the volume of at least 200 patients referred to other institutions for surgery following a cardiac catheterization procedure at the applicant facility
- or-
2. a minimum of 750 cardiac catheterizations were performed annually at the applicant facility

1. Cardiac Surgery Referrals

The lack of an open heart surgery program has forced NM LFH's patients to travel or to be transferred to other hospitals, putting those patients at risk. In CY23, 311 patients were referred to either NMH or NM McHenry for cardiac surgery or a procedure requiring cardiac back-up following a cardiac catheterization procedure at NM LFH. In CY24, the number of patients referred to another NM hospital increased to 320. In the first 5 months of CY25, 135 patients were referred to either NMH or NM McHenry (annualized to 355).

If even 65% of the patients referred to NMH or NM McHenry who received their cardiac catheterization procedure at NM LFH, had instead received their cardiac surgery procedures at NM LFH, there would have been over 200 cardiac surgery cases (202 cases in CY23, 208 cases in CY24, and 231 in CY25).

2. Cardiac Catheterization Volume

Over the last decade, from CY14 – CY24, cardiac catheterization volume at NM LFH increased by 349%. NM LFH has exceeded the required 750 cardiac catheterizations for the past 9 years, since CY16.

Cardiac Catheterizations	
CY14	598
CY15	706
CY16	908
CY17	977
CY18	1,136
CY19	1,206
CY20	1,287
CY21	1,770
CY22	2,056
CY23	2,461
CY24	2,684

In CY24, there was only one hospital in Illinois without an open heart surgery program with higher cardiac catheterization volume than NM LFH. Additionally,

there were 19 hospitals with open heart surgery programs with lower cardiac catheterization volume than NM LFH.

Large cardiac catheterization programs, like the one at NM LFH, should ideally have cardiovascular surgery programs for several reasons:

- **Comprehensive Care:** Having both programs allows for a more comprehensive approach to patient care. Patients can receive a full spectrum of treatment options, ranging from minimally invasive procedures to more complex surgical interventions.
- **Enhanced Patient Outcomes:** Studies have shown that having surgical backup available can improve patient outcomes in catheterization programs. If complications arise during a catheterization procedure, immediate access to surgical intervention can be life-saving.
- **Collaboration and Communication:** Co-located programs facilitate better collaboration among cardiologists and cardiovascular surgeons, leading to more effective treatment planning and decision-making for patients.
- **Continuity of Care:** Patients benefit from continuity of care when both types of services are housed within the same institution. It ensures smoother transitions between diagnostic, interventional, and surgical phases of care.
- **Streamlined Patient Flow:** A combined program can lead to more efficient use of resources, including shared diagnostic tests and imaging, minimizing delays in care and improving the overall patient experience.
- **Training and Education:** A robust cardiovascular program can provide enhanced training opportunities for medical staff, facilitating a better understanding of the full range of cardiac care.
- **Research and Development:** Large integrated programs can foster research opportunities that enhance the understanding of cardiac conditions and lead to innovative treatments, benefiting patients at large.

1110.220(b)(3) – Unnecessary Duplication of Services

Under this criterion, the “applicant must document that the volume of any existing services within 20 miles travel time from the applicant will not be reduced below 350 procedures annually for adults and 75 procedures annually for pediatrics.” However, all of the providers within the 20-mile radius of NM LFH operate below 350 adult cases. In fact, only 12 of the 49 open heart surgery programs in all of Illinois performed 350 or more open heart surgeries in CY24.

Despite case volume being less than 350 cases, historic case volume in the 20-mile radius is still more than adequate to ensure surgeon and surgical team competency. Additionally, the number of cardiac surgery cases performed at hospitals within the 20-mile radius increased by over 10% from CY21 – CY24.

The lower number of cases is consistent with current industry expectations. The shift in cardiac care toward more minimally invasive procedures is a trend that has persisted for

the last 30 years. Transcatheter Aortic Valve Replacement (TAVR) procedures have experienced a notable increase in volume, while Coronary Artery Bypass Grafting (CABG) surgeries have seen a decline. This shift can be attributed to several factors, including the minimally invasive nature of TAVR, which offers patients a quicker recovery time, fewer hospital stays, and reduced procedural risks compared to traditional open-heart surgeries like CABG. As awareness of TAVR benefits grows among both patients and healthcare providers, more individuals with aortic stenosis are being referred for this innovative procedure. However, cardiac surgery backup is required for a hospital to perform TAVR procedures, thereby limiting a hospital's ability to provide comprehensive cardiovascular care if not approved for open heart surgery.

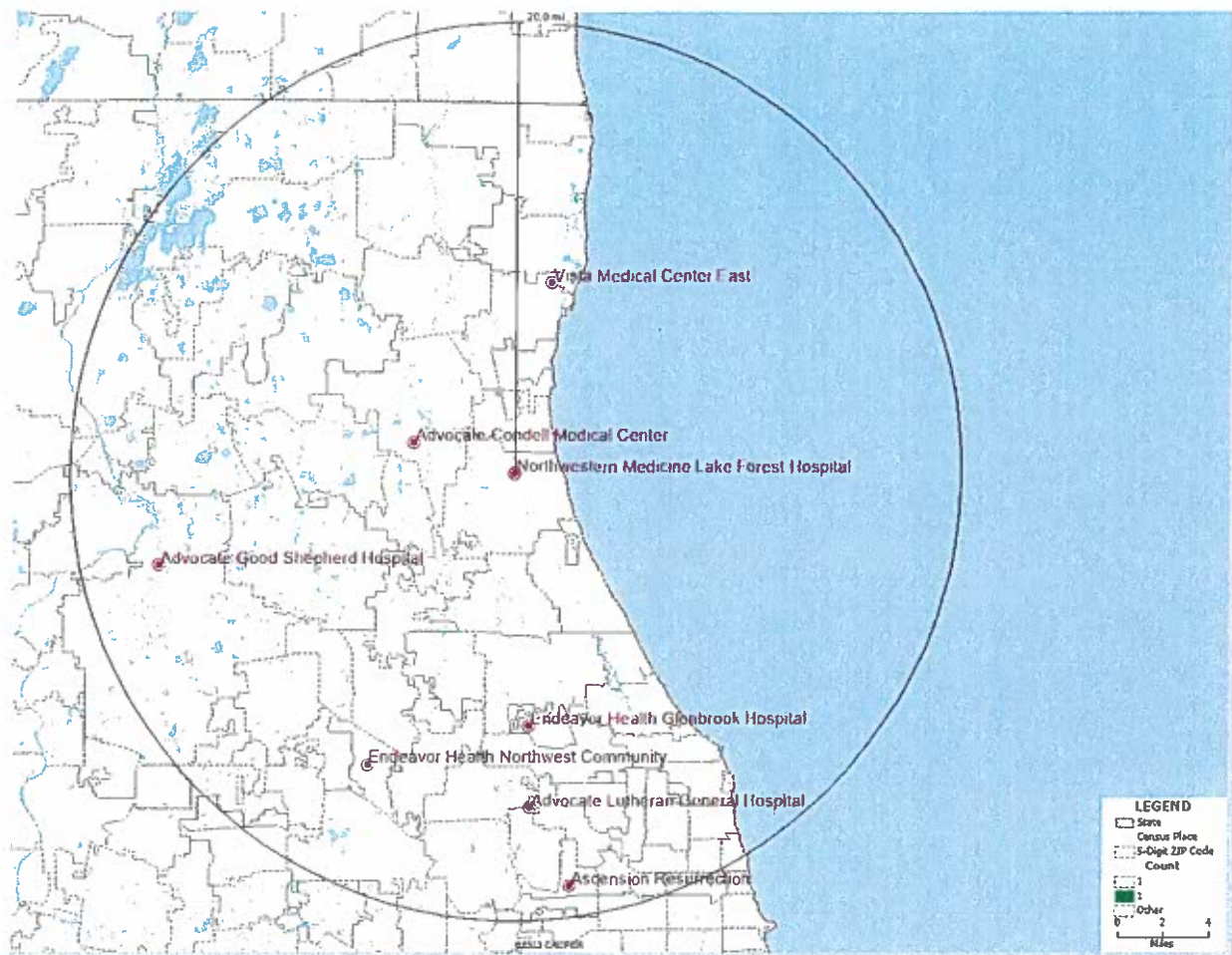
In contrast, the decline in CABG volumes reflects advancements in medical management strategies, including better pharmaceuticals and lifestyle modifications aimed at cardiovascular health, which have reduced the need for invasive interventions. This trend underscores a broader evolution in cardiac care, where less invasive options are increasingly preferred for suitable candidates, ultimately enhancing patient outcomes and overall healthcare efficiency.

Further growth in structural heart procedures is expected as technology evolves with Transcatheter Mitral (TMVr) and Tricuspid Valve Repair (TTVr) as well as replacements. Robust structural heart programs increase the number of overall cardiac surgical procedures by expanding the pool of patients seeking treatment. Successful delivery of comprehensive cardiovascular care hinges on close collaboration between cardiac surgeons and cardiologists, as well as the implementation of emerging technologies.

Given the high cardiac catheterization volume and the referral volume to other NM hospitals after a catheterization at NM LFH, the requirements for the establishment of the service have been met. The purpose of the project is to increase access to NM cardiac surgical services closer to where NM patients live in the north region. As such, no change in referral patterns for cardiac surgery relative to non-NM hospitals is anticipated. NM BCVI surgeons do not perform cases at any non-NM facilities.

The following hospitals within the 20-mile radius have open heart surgery programs and were contacted to determine the projected impact the proposed project will have on their program:

1. Advocate Condell Medical Center, Libertyville
2. Advocate Lutheran General Hospital, Park Ridge
3. Advocate Good Shepherd Hospital, Barrington
4. Endeavor Health Glenbrook Hospital, Glenview
5. Endeavor Health Northwest Community Hospital, Arlington Heights
6. Ascension Alexian Brothers Medical Center, Elk Grove Village
7. Ascension Resurrection Medical Center, Chicago
8. Vista Medical Center East, Waukegan



Copies of the letters are included on the next page. No responses were received.



Mr. Matthew Primack
President
Advocate Condell Medical Center
801 South Milwaukee Avenue
Libertyville, IL 60048

Dear Mr. Primack,

This proposed establishment of an open heart surgery service will accommodate Northwestern Medicine patients receiving cardiovascular care at NMLFH who need cardiac surgery. Currently, those patients are being referred to Northwestern Memorial Hospital or Northwestern Medicine McHenry Hospital which may be a considerable distance from where the patients live. This project will allow NM patients to remain in the A-09 planning area for their complete cardiovascular care.

In accordance with Section 1110.22(b)(3) of the HFSRB rules, we are notifying providers approved for this service within a 20-mile radius of NMLFH to seek impact statements. We ask that you provide, in your opinion, the effect that NMLFH's proposed open heart surgery program will have on your hospital. As stated above, we anticipate patients will be coming from other Northwestern Medicine facilities, and as such do not anticipate that this will adversely impact your program.

Please send your response to Bridget Orth, Director of Regulatory Planning, at borth@nm.org within 15 days of receipt of this letter. If we do not receive a response from you during that time, it will be assumed that you agree that these plans will not have an adverse impact on your program.

If you have any questions about Northwestern Medicine's plans, please feel free to contact me.

Samuel Collins

Seamus Collins
President
Northwestern Medicine Lake Forest Hospital



ATTACHMENT-22



Lake Forest Hospital
1000 North Westmoreland Road
Lake Forest, Illinois 60045-9989
847.234.5600
TTY:711
nm.org

July 15, 2025

Ms. Karen Lambert
President
Advocate Good Shepherd Hospital
450 West Highway 22
Barrington, IL 60010

Re: Notice of Planned CON Application for Establishment of Open Heart Surgery at Northwestern Medicine Lake Forest Hospital

Dear Ms. Lambert,

This letter is to inform you that Northwestern Medicine intends to submit a certificate of need application to the Illinois Health Facilities and Services Review Board (HFSRB) for the establishment of an open heart surgery category of service at Northwestern Medicine Lake Forest Hospital (NMLFH) in Lake Forest, Illinois.

This proposed establishment of an open heart surgery service will accommodate Northwestern Medicine patients receiving cardiovascular care at NMLFH who need cardiac surgery. Currently, those patients are being referred to Northwestern Memorial Hospital or Northwestern Medicine McHenry Hospital which may be a considerable distance from where the patients live. This project will allow NM patients to remain in the A-09 planning area for their complete cardiovascular care.

In accordance with Section 1110.22(b)(3) of the HFSRB rules, we are notifying providers approved for this service within a 20-mile radius of NMLFH to seek impact statements. We ask that you provide, in your opinion, the effect that NMLFH's proposed open heart surgery program will have on your hospital. As stated above, we anticipate patients will be coming from other Northwestern Medicine facilities, and as such do not anticipate that this will adversely impact your program.

Please send your response to Bridget Orth, Director of Regulatory Planning, at borth@nm.org within 15 days of receipt of this letter. If we do not receive a response from you during that time, it will be assumed that you agree that these plans will not have an adverse impact on your program.

If you have any questions about Northwestern Medicine's plans, please feel free to contact me.

Sincerely,

Seamus Collins
President
Northwestern Medicine Lake Forest Hospital



ATTACHMENT-22



Lake Forest Hospital
1000 North Westmoreland Road
Lake Forest, Illinois 60045-9989
847.234.5600
TTY:711
nm.org

July 14, 2025

Ms. Allison Wyler
President
Advocate Lutheran General Hospital
1775 Dempster Street
Park Ridge, IL 60068

Re: Notice of Planned CON Application for Establishment of Open Heart Surgery at Northwestern Medicine Lake Forest Hospital

Dear Ms. Wyler,

This letter is to inform you that Northwestern Medicine intends to submit a certificate of need application to the Illinois Health Facilities and Services Review Board (HFSRB) for the establishment of an open heart surgery category of service at Northwestern Medicine Lake Forest Hospital (NMLFH) in Lake Forest, Illinois.

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Sincerely,

Seamus Collins
President
Northwestern Medicine Lake Forest Hospital

ATTACHMENT-22



Lake Forest Hospital
1000 North Westmoreland Road
Lake Forest, Illinois 60045-9989
847.234.5600
TTY:711
nm.org

July 14, 2025

Mr. Dan Doherty
President & Chief Executive Officer
Ascension Alexian Brothers
800 Biesterfield Road
Elk Grove Village, IL 60007

Re: Notice of Planned CON Application for Establishment of Open Heart Surgery at Northwestern Medicine Lake Forest Hospital

Dear Mr. Doherty,

This letter is to inform you that Northwestern Medicine intends to submit a certificate of need application to the Illinois Health Facilities and Services Review Board (HFSRB) for the establishment of an open heart surgery category of service at Northwestern Medicine Lake Forest Hospital (NMLFH) in Lake Forest, Illinois.

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If you have any questions about Northwestern Medicine's plans, please feel free to contact me.

Sincerely,

Seamus Collins
President
Northwestern Medicine Lake Forest Hospital

ATTACHMENT-22



Dr. Sunny Bhatia
President
Resurrection Medical Center
7435 West Talcott Avenue
Chicago, IL 60631

Dear Dr. Bhatia,

This letter is to inform you that Northwestern Medicine intends to submit a certificate of need application to the Illinois Health Facilities and Services Review Board (HFSRB) for the establishment of an open heart surgery category of service at Northwestern Medicine Lake Forest Hospital (NMLFH) in Lake Forest, Illinois.

This proposed establishment of an open heart surgery service will accommodate Northwestern Medicine patients receiving cardiovascular care at NMLFH who need cardiac surgery. Currently, those patients are being referred to Northwestern Memorial Hospital or Northwestern Medicine McHenry Hospital which may be a considerable distance from where the patients live. This project will allow NM patients to remain in the A-09 planning area for their complete cardiovascular care.

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If you have any questions about Northwestern Medicine's plans, please feel free to contact me.

Sincerely,

Seamus Collins
President
Northwestern Medicine Lake Forest Hospital

9569 0710 5270 3011 2969 40

U.S. Postal Service™
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Chicago, IL 60601

Domestic Mail Fee \$15.50

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Postmark: CHICAGO, IL 60601 07/16/2025

Post Office: CHICAGO, IL 60601

Dr. Sunny Sharma, Resurrection Medical Center
7478 S. Talbot Ave
Chicago, IL 60649

ATTACHMENT-22



Lake Forest Hospital
1000 North Westmoreland Road
Lake Forest, Illinois 60045-9989
847.234.5600
TTY: 711
nm.org

July 14, 2025

Mr. Dave Rahija
President
Endeavor Health Northwest Community Hospital
800 West Central Road
Arlington Heights, IL 60005

Re: Notice of Planned CON Application for Establishment of Open Heart Surgery at Northwestern Medicine Lake Forest Hospital

Dear Mr. Rahija,

This letter is to inform you that Northwestern Medicine intends to submit a certificate of need application to the Illinois Health Facilities and Services Review Board (HFSRB) for the establishment of an open heart surgery category of service at Northwestern Medicine Lake Forest Hospital (NMLFH) in Lake Forest, Illinois.

This proposed establishment of an open heart surgery service will accommodate Northwestern Medicine patients receiving cardiovascular care at NMLFH who need cardiac surgery. Currently, those patients are being referred to Northwestern Memorial Hospital or Northwestern Medicine McHenry Hospital which may be a considerable distance from where the patients live. This project will allow NM patients to remain in the A-09 planning area for their complete cardiovascular care.

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If you have any questions about Northwestern Medicine's plans, please feel free to contact me.

Sincerely,

Seamus Collins
President
Northwestern Medicine Lake Forest Hospital



ATTACHMENT-22



Lake Forest Hospital
1000 North Westmoreland Road
Lake Forest, Illinois 60045-9989
847.234.5600
TTY:711
nm.org

July 14, 2025

Ms. Maria Knecht
President
Endeavor Health Glenbrook Hospital
2100 Pfingsten Road
Glenview, IL 60026

Re: Notice of Planned CON Application for Establishment of Open Heart Surgery at Northwestern Medicine Lake Forest Hospital

Dear Ms. Knecht,

This letter is to inform you that Northwestern Medicine intends to submit a certificate of need application to the Illinois Health Facilities and Services Review Board (HFSRB) for the establishment of an open heart surgery category of service at Northwestern Medicine Lake Forest Hospital (NMLFH) in Lake Forest, Illinois.

This proposed establishment of an open heart surgery service will accommodate Northwestern Medicine patients receiving cardiovascular care at NMLFH who need cardiac surgery. Currently, those patients are being referred to Northwestern Memorial Hospital or Northwestern Medicine McHenry Hospital which may be a considerable distance from where the patients live. This project will allow NM patients to remain in the A-09 planning area for their complete cardiovascular care.

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If you have any questions about Northwestern Medicine's plans, please feel free to contact me.

Sincerely,

Seamus Collins
President
Northwestern Medicine Lake Forest Hospital



ATTACHMENT-22



Lake Forest Hospital
1000 North Westmoreland Road
Lake Forest, Illinois 60045-9989
847.234.5600
TTY:711
nm.org

July 14, 2025

Ms. Kim Needham
Chief Executive Officer
Vista Medical Center East
1324 North Sheridan Road
Waukegan, IL 60085

Re: Notice of Planned CON Application for Establishment of Open Heart Surgery at Northwestern Medicine Lake Forest Hospital

Dear Ms. Needham,

This letter is to inform you that Northwestern Medicine intends to submit a certificate of need application to the Illinois Health Facilities and Services Review Board (HFSRB) for the establishment of an open heart surgery category of service at Northwestern Medicine Lake Forest Hospital (NMLFH) in Lake Forest, Illinois.

This proposed establishment of an open heart surgery service will accommodate Northwestern Medicine patients receiving cardiovascular care at NMLFH who need cardiac surgery. Currently, those patients are being referred to Northwestern Memorial Hospital or Northwestern Medicine McHenry Hospital which may be a considerable distance from where the patients live. This project will allow NM patients to remain in the A-09 planning area for their complete cardiovascular care.

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If you have any questions about Northwestern Medicine's plans, please feel free to contact me.

Sincerely,

Seamus Collins
President
Northwestern Medicine Lake Forest Hospital



ATTACHMENT-22

1110.220(b)(4) – Support Services

By signing the certification page within this application, NM LFH attests that the following services are already available on a 24-hour basis and/or will be immediately available:

- a. Surgical and cardiological team appropriate for age group served.
- b. Cardiac surgical intensive care unit – NM LFH increased the number of ICU beds from 12 to 24 in CON #22-047. The new ICU unit is scheduled to open in February 2026.
- c. Emergency room with full-time director, staffed 24 hours for cardiac emergencies with acute coronary suspect surveillance area and voice communication linkage to the ambulance service and the coronary care unit.
- d. Catheterization-angiographics laboratory services.
- e. Nuclear medicine laboratory.
- f. Cardiographics laboratory, electrocardiography, including exercise stress testing, continuous electrocardiograph (ECG) monitoring and phonocardiography.
- g. Echocardiography service.
- h. Hematology laboratory.
- i. Microbiology laboratory.
- j. Blood gas and electrolyte laboratory.
- k. Electrocardiographic laboratory.
- l. Blood bank and coagulation laboratory.
- m. Pulmonary function unit.
- n. Pacemaker installation.
- o. Organized cardiopulmonary resuscitation team.
- p. Preventive maintenance program for all biomedical devices, electrical installations, and environmental controls.
- q. Renal dialysis.

1110.220(b)(5) – Staffing

Bluhm Cardiovascular Institute is committed to recruiting the best and brightest in the field to help achieve superior results for NM patients and improve their quality of life. NM has a robust physician platform with over 20 practicing providers in the north region (including AMC providers who practice in the north region) and more than 15 advanced practice providers. NM is currently recruiting 6 additional physicians to support projected continued growth and expansion of services and to improve access.

A robust leadership structure has been developed that supports each distinctive clinical program under Dr. Cohen, BCVI Medical Director, who leads the program:

- Dr. Ian Cohen – Charles and Barbara Strang Medical Director, BCVI North and Northwest Regions

- Dr. Tim Provias – Medical Director of Cardiology
- Dr. Arif Jivan – Medical Director of Cardiac Catheterization Lab, Medical Director of Heart Brain Program
- Dr. Kaustubha Patil – Medical Director of Electrophysiology
- Dr. Korosh Sharain – Medical Director, Diagnostic Cardiology and Advanced Cardiac Imaging
- Dr. Tadika Tomia – Medical Director, Vascular Surgery

Cardiac Surgery leadership will be provided by:

- Dr. Aqeel A. Sandhu – Director, Cardiac Surgery, BCVI Northwest Region
- Dr. Douglas Johnston – Chief, Cardiac Surgery, BCVI Northwestern Medicine

NM LFH has all pertinent medical specialists and ancillary staff already employed to provide 24/7 care to cardiac surgery patients.

Additionally, in December 2023, Dr. Christina Anderson, interventional cardiologist, joined NM and established the first dedicated valve clinic at NM LFH in 2025, resulting in 15 TAVRs subsequently performed at NMH to date. Dr. Anderson also supported diagnostic catheter volume growth at NM LFH. Last year, Dr. Hawkins Gay became the first full-time electrophysiologist in the north suburbs of Chicago. Dr. Gay opened the first electrophysiology clinic at NM Grayslake Outpatient Center. Through this work, Dr. Gay has supported implant volume growth at NM LFH over the last year by 117%. Dr. Anand Brahmandam, a vascular surgeon, was hired to support Interventional vascular growth at NM LFH, and Dr. Konrad Sawicki, a general cardiologist, established the first cardiometabolic clinic in the region. BCVI has an existing robust advanced practice provider structure at NM LFH and due to growth and expansion have hired five additional ambulatory cardiology advanced practice providers this past year who have helped open clinics in Lake Forest, Glenview, and Grayslake and improve patient access to NM cardiologists.

NM has a robust recruitment strategy to hire the remaining required positions prior to the first cardiac surgery patient if this project is approved. The recruitment process for other key roles will begin immediately after CON approval and will leverage the strength of NM's other cardiac surgery programs for training, competency, and cross coverage. NM system leaders of cardiac surgery and anesthesia will help with recruitment.

An NM Talent Acquisition Director will assist in posting the approved positions through the NM career page, Indeed, and other venues. Historically, recruitment efforts have not been challenging at NM LFH because of the link to an AMC (NMH). Many internal staff want to make the transition out of the city but stay within the NM system.

CURRICULUM VITAE

Name: Douglas Ross Johnston
Date of Birth: 28 September 1971
Office Address: 676 North St Clair Dr
Arkes Family Pavilion, Suite 730
Chicago, IL 60611
Telephone: 312.694.8280
216.312.1103 mobile
Email: doug.johnston@nm.org

EDUCATION:

1985-1989 Guilford High School, Guilford, CT
1989-1993 Dartmouth College, Hanover, NH
A.B., Anthropology, Magna cum laude
1994-1998 Harvard Medical School, Boston, MA
Doctor of Medicine

PROFESSIONAL TRAINING:

1998-1999 Intern in Surgery
Massachusetts General Hospital, Boston MA
1999-2001 Junior Resident in Surgery
Massachusetts General Hospital, Boston MA
2001-2003 Research Fellow, Transplantation Biology Research Center
Massachusetts General Hospital, Boston MA
2003-2005 Senior Resident in Surgery
Massachusetts General Hospital, Boston MA
2005-2007 Resident in Cardiothoracic Surgery
Cleveland Clinic Foundation, Cleveland, OH
2007-2008 Administrative Chief Resident, Cardiothoracic Surgery
Cleveland Clinic Foundation, Cleveland, OH
2008 Endovascular Fellow
Cleveland Clinic Foundation, Cleveland, OH
2008 Interventional catheterization lab fellow
Asian Heart Institute, Mumbai, India

APPOINTMENTS:

2007- Clinical Instructor of Surgery
Cleveland Clinic Lerner College of Medicine, of Case Western Reserve University

DOUGLAS ROSS JOHNSTON, M.D.

2008-2011	Associate Staff Surgeon Department of Thoracic and Cardiovascular Surgery, Cleveland Clinic Foundation, Cleveland, OH
2009-2011	Adjunct Staff Surgeon The Chester County Hospital, West Chester, PA
2009-2017	Associate Program Director Department of Thoracic and Cardiovascular Surgery, Cleveland Clinic Foundation, Cleveland, OH
2011-2018	Staff Surgeon Department of Thoracic and Cardiovascular Surgery, Cleveland Clinic Foundation, Cleveland, OH
2017-2022	Program Director for Thoracic Surgery Department of Thoracic and Cardiovascular Surgery Cleveland Clinic, Cleveland, OH
2018-2022	Vice Chairman for Education Department of Thoracic and Cardiovascular Surgery, Cleveland Clinic, Cleveland, OH
2022-	Chief, Division of Cardiac Surgery Northwestern Medicine Chicago, IL
2022-	Professor of Surgery Northwestern Feinberg School of Medicine Chicago, IL

BOARD CERTIFICATION:

2008	American Board of Surgery, No 53554, May 8, 2008
2009	American Board of Thoracic Surgery, No 7558, May 29, 2009
2017	American Board of Thoracic Surgery recertification

LICENSURE:

2001-2005	Massachusetts Medical License #209943 (inactive)
2008-	Ohio Full Medical License #35.090948 (active)
2009-2017	Pennsylvania Full Medical License MD438862 (inactive)
2022-	Illinois Medical License #036.161339 (active)

PROFESSIONAL SOCIETIES:

1994-	Massachusetts Medical Society
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DOUGLAS ROSS JOHNSTON, M.D.

1998-	American College of Surgeons, fellow
2001-	International Society for Heart and Lung Transplantation
2006-2008	Thoracic Surgery Residents Association, curriculum committee
2007-	Society of Cardiovascular Computed Tomography
2009-	Society of Thoracic Surgeons
2015-	American Association for Thoracic Surgery

HONORS AND AWARDS:

1989-1993	Dartmouth College Phi Beta Kappa High Honors in Major Study, Anthropology Rufus Choate Scholar, top 5% of class Class of 1922 Scholar Presidential Scholar Claire Garber Goodman Fund Scholar, Funded scholarship for off-campus research Robert A. McKennan Prize	
1994-1998	Harvard Medical School HMS National Scholarship for academic excellence	
1998-2005	Massachusetts General Hospital Resident Teaching Award Nomination Edward D. Churchill Research Scholarship	2001-2003
2003	American College of Surgeons Resident Research Scholarship	2001-2003
2005-	Cleveland Clinic William E. Lower Award, Clinical Paper Alternate Charles H. Bryan Clinical Excellence Award Early Career Innovation Award CC Innovator Award Outstanding Achievement in Innovation Heart and Vascular Institute Innovation Award Sones-Favoloro Teacher of the Year Bruce W Lytle Master Surgical Educator Award	2007 2008 2011 2013, 2010 2015 2015 2016 2022, 2019, 2013, 2010
2009	Society of Thoracic Surgeons J. Maxwell Chamberlain Award	

NATIONAL POSTS AND COMMITTEES:

2009-	Society of Thoracic Surgeons STSU Planning Committee – Co-Chair (2011) Workforce on Annual Meeting (2011)
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DOUGLAS ROSS JOHNSTON, M.D.

Workforce on Annual Meeting (2009-2010)
STS University Task Force (2010)

2008-	Thoracic Surgery Directors Association Early Specialization Committee (2018-2020)
2011-	Journal of Vascular Surgery Manuscript Reviewer
2013-	Circulation - Manuscript Reviewer
2014-	Annals of Thoracic Surgery – Manuscript Reviewer
2015-	Journal of Thoracic and Cardiovascular Surgery – Manuscript Reviewer
2016-	American College of Cardiology Aortic Stenosis Appropriate Use Criteria (AUC) rating panel
2018-	Frontiers in Cardiovascular Medicine – Editorial Board
2020-	American Heart Association / American College of Cardiology Valvular Heart Disease Performance Metrics Writing Committee
2021-	American Association for Thoracic Surgery – 2024 Program Committee

ADMINISTRATIVE POSITIONS:

Cleveland Clinic

Associate Program Director, Thoracic Surgery Residency	2008-2017
Education Committee, Cardiothoracic Surgery	2008-2022
Chair - Heart and Vascular Institute Utilization Committee	2008-2014
Cardiac Surgery Post-Operative Care Service Director	2008-2010
Chair, Heart and Vascular Institute Documentation Steering Committee	
Heart and Vascular Institute Compliance Committee	2009-2022
Clinical Competency Committee	2012-2022
Chair	2015-17
Heart and Vascular Institute Innovation Committee Chair	2015-2022
Heart and Vascular Institute Executive Committee	2015-2022
Cleveland Clinic ACO Board Member	2016-2022
Surgical Director of the Aortic Valve Center	2015-2022
Medical Neighborhood Committee Co-Chair	2017-2020
Cleveland Clinic Population Health Committee	2017-2022
Program Director, Thoracic Surgery	2017-2022
Vice Chair, Department of Thoracic and Cardiovascular Surgery	2018-2022
Professional Conduct Committee member and coach	2020-2022

External

Baxter Healthcare, Scientific Advisory Board	2008-2012
KEF Healthcare, Board of Directors	2012-2017
Aitheras Aviation, Advisory Board	2014-
St Jude Medical Scientific Advisory Board	2015-2019
HD Medical Scientific Advisory Board	2016-
Capsico Health Scientific Advisory Board	2016-

DOUGLAS ROSS JOHNSTON, M.D.

Beyond Limits Healthcare Advisory Board

2018-

INNOVATIONS:

Intellectual Property

2019	Apparatus and method for repairing the function of a diseased valve	US10335272132
2018	A system and method for monitoring surgical objects (pending)	US20190362839A1
2015	Logic Flow System and Method US14573487	Filed
2014	Self Evolving Predictive Model US20140279754A1	Filed
2014	System, Method and Graphical User Interface to Facilitate Problem Oriented Medical Charting US20130212508A1	Filed
2012	Sternal Closure Apparatus and Method CCF 021346-US-PRO	filed
2012	Integrated Surgical Task Lighting US20130310652A1	Filed
2011	Diagnostic Mapping Application CCF 020173-US PAT	Filed
2011	Interactive Whiteboard System and Method US14573760	Pending
2011	Graphical Tool for Managing a Longitudinal Patient Episode61/560,985	Filed
2011	Predictive Modeling US 61/477,381	Filed
2006	Heart BRACE – Co-inventor, US D552.108 S	Pat

FUNDED RESEARCH:

2020-2022	PROACT Xa: A trial to Determine if Participants with an On-X Aortic Valve Can be Maintained safely on Apixaban. Site Principal Investigator, Steering Committee.
2020-	SeriCAL Project: Total of \$300,000 from the Hickey Family Foundation, Ohio Third Frontier and Cleveland Clinic Caregiver Catalyst Fund, to investigate devices to reduce work related spine injuries in surgical teams. Principal Investigator
2019-	Ohio Third Frontier Technology Validation and Startup Fund \$150,000 for Virtual OR Situational Awareness Surgical Training. Principal Investigator
2017-Hold	Invivity: INSPIRIS RESILIA Aortic Valve, Valve-in-Valve Surveillance Study. National PI
2014-2023	Perigon Pivotal Trial: Medtronic Pericardial Surgical Aortic Valve Replacement Pivotal Trial A Multi-center, Non-randomized Trial to Determine the Safety and Effectiveness of the Model 400 Aortic Valve Bioprosthesis in Patients with Aortic Valve Disease. Site Principal Investigator
2012-	CCF Innovations PDF Grant - Second \$50,000 Grant for Visualization of Medical Record Data Principal Investigator

DOUGLAS ROSS JOHNSTON, M.D.

2012 -2023	TRANSFORM: Multi-Center Experience with the Rapid Deployment Edwards Intuity Valve System For Aortic Valve Replacement (Trial). Site Principal Investigator
2012-2017	Commence: Prospective, Non-Randomized, Multicenter Clinical Evaluation of Edwards Pericardial Bioprostheses With a New Tissue Treatment Platform. Site Principal Investigator
2011-	GCIC Innovation Grant \$500,000 for development of "Interactive Visual Health Record" cardiovascular module Co-Investigator
2010-	Novel interface for intelligent information display from electronic medical records Cleveland Clinic Innovations, Product Development Fund Co- Principal Investigator
2009-	Risk factors for length of stay and non-home discharge in cardiac surgery Principal Investigator Funded by Cleveland Clinic
2009-	Clinical Trial of the On-X Valve Using Low Dose Anticoagulation (PROACT ON-X) Funded by On-X Life Technologies, Inc, Co-Investigator
2008-	CT Surgery Network (CTSN) Research Group "Surgical Interventions for Moderate Ischemic Mitral Regurgitation" "Evaluation of Outcomes Following Mitral Valve Repair/Replacement in Severe Chronic Ischemic Mitral Regurgitation" Co-Investigator
2001-2003	Mechanisms of Pulmonary Allograft Rejection in Swine NIH / NHLBI 5 F32 HL69645-02, Principal Investigator
2001-2003	Pathogenesis and Treatment of Chronic Lung Allograft Rejection in MHC Inbred Miniature Swine: a clinically relevant large animal model ACS Resident Research Fund, Principal Investigator
1995-1998	Regulation of Syndecan Expression in Wound Healing Funded by Harvard Medical School, Joint Program In Neonatology Co-Investigator
1992-1993	Tuberculosis Treatment and Prevention in a Community with Strong Indigenous Health Systems Field research funded by Claire Garber Goodman Fund of Dartmouth College Principal Investigator

SELECTED PRESENTATIONS:

- January 29, 2022 STS Virtual Meeting
COMMANDO Operation
Invited Lecture
- September 21, 2021 AATS Honoring our Mentors Symposium
Training for Excellence in Cardiothoracic Surgery
Invited Lecture

DOUGLAS ROSS JOHNSTON, M.D.

- May 1 2021 AATS Annual Meeting (Virtual)
Sternal sparing aortic valve replacement
Invited lecture
- October 29, 2020 Maryland Cardiac Surgery Quality Initiative
Developing an Aortic Valve Center of Excellence
Invited lecture
- May 8, 2020 AATS Annual Meeting (Virtual)
Redefining "Low Risk": Outcomes of Surgical Aortic Valve Replacement
in Low-Risk Patients in the TAVR Era
Plenary Session Presentation
- February 28-29, 2020 Joint Difficult Case Conference
Dubai, UAE
- January 25, 2020 Society of Thoracic Surgeons 56th Annual Meeting
STS University Instructor
Minimally Invasive Aortic Valve Surgery
New Orleans, LA
- December 12-13, 2019 Mastering the Management of Aortic Valve Disease
Cleveland Clinic Summit
New York, NY
- May 24, 2019 Japanese Society of Vascular Surgery
Novel stent graft therapy for the thoracoabdominal aorta
Nagoya, Japan
- May 4, 2019 AATS Annual Meeting
Complete Resection Improves Survival over Partial "Phrenic to Phrenic"
Resection for Constrictive Pericarditis
Minimally Invasive Aortic Valve Disease: Standard of Care
Toronto, Ontario
Canada
- April 25, 2019 Cognitive Performer Summit
San Francisco, CA
- April 4, 2019 STS TEVAR Symposium
Creating an Acute Aortic Syndrome Team
Chicago, IL
- January 29, 2019 Society of Thoracic Surgeons 55th Annual meeting
Sutureless Aortic Valve Replacement
San Diego, CA
- November 15-16, 2018 STS / EACTS Latin American Congress
HOCM – How we do it
Minimally Invasive Aortic Valve Disease
- August 22, 2018 Mt. Sinai Medical Center Grand Rounds
Bicuspid Aortic Valve: Patient Centered Therapy
New York, NY

DOUGLAS ROSS JOHNSTON, M.D.

- June 29, 2018 AATS Surgical Patient Safety Symposium
Adapting best practices from high performing teams in aviation, the military and sports to medicine: First Principles
- May 1, 2018 American Association for Thoracic Surgery
Three year outcomes of an aortic valve with novel tissue
San Diego, CA
- April 13, 2018 Master Class in Endocarditis
Ascending aortic graft infections
Cleveland, OH
- January 30, 2018 Society of Thoracic Surgeons 54th Annual meeting
Evolving technique for pericardiectomy: Safety, on-pump surgery, and complete resection
Fort Lauderdale, FL
- January 27, 2018 STS Tech-Con
Immersive video for OR training
Fort Lauderdale, FL
- January 25, 2018 Toronto Cardiac Tumor Conference
Is myxoma always an emergency? Can we wait on left sided lesions?
Toronto, CA
- December 1, 2017 STS Structural Heart Symposium
Tricuspid valve interventions
Chicago, IL
- October 18, 2017 Joint Cardiology conference Cardioinfantil,
Type A aortic dissection: an aggressive hybrid approach
Bogota, Colombia
- September 26, 2017 AATS Academic Leadership Seminar
Developing and leading a team, what I have learned from Navy SEALs and aviation
Cleveland, OH
- August 28, 2017 European Society of Cardiology
Controversies in management of difficult case scenarios
Barcelona, Spain
- April 30, 2017 AATS / AMSECT Patient Safety Symposium
Training surgical teams for high performance: What we can learn from aviation, military, and other high performance cultures.
Boston, MA
- December 2, 2016 STS TEVAR symposium
What's New? Double branch devices
Chicago, IL
- November 15, 2016 American Heart Association Scientific Sessions:
Translational Approach to Aortic Aneurysms
New Orleans, LA

DOUGLAS ROSS JOHNSTON, M.D.

- September 29, 2016 IBM Cardiac Technology Symposium Keynote Address:
What cardiac care needs from technology innovation
White Plains, NY
- September 8, 2016 Rochester General Hospital Grand Rounds
Present: Building an Aortic Valve Center
Rochester, NY
- August 29, 2016 European Society of Cardiology Cleveland Clinic Satellite
Difficult cases, when the guidelines don't help
- March 14, 2016 Society for Clinical Vascular Surgery
Present: Team Approach in Aortic Dissection
Las Vegas, NV
- December 4-8, 2015 Interamerican Congress of Cardiology and Cardiovascular Surgery
Present: Difficult cases in coronary artery disease
Aortic valve disease in 2015
Mitral valve replacement: Bad hearts, bad valves, reoperations
- October 8, 2015 American College of Surgeons
Present: Team approach to aortic dissection
Chicago, IL
- October 5, 2015 European Association of Cardiothoracic Surgery
Present: Aortic Dissection: The arch should not be routinely repaired
Amsterdam, Netherlands
- September 2, 2015 Greenberg Stent Summit
Surgical perspective on the ascending aorta
Cleveland, OH
- August 25, 2015 St Jude Lillehei Memorial Workshop
Present: Minimally invasive aortic valve replacement
Minneapolis, MN
- May 19, 2015 Washington Hospital Center Grand Rounds
State of the Art in Aortic Valve Disease
Washington, DC
- May 13-15, 2015 Houston Methodist Research Institute
6th Annual Re-Evolution Summit
Present: Aortic Valve: Ministernotomy
Houston, TX
- March 27-28, 2015 DeBakey Heart and Vascular Center Valve Symposium
Present: Minimally Invasive Surgical Implant of the Trifecta Valve
Houston, TX
- November 15-20, 2014 The American Austrian Foundation
Salzburg Medical Seminars International
Present: Lung Transplantation, Ischemic MR, Valvular Cardiomyopathy.
Salzburg, Austria
- September 12, 2014 21st Century Cardiothoracic Surgical Society – Integration and Innovation
Present: Innovation at the Cleveland Clinic

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Cleveland, OH

- August 7, 2014 Internacional Symposium of Cardiology
Present: Hot Topics-Valvopatias – Surgical Aortic Valve Intervention
Rio de Janeiro, Brazil
- August 7, 2014 Internacional Symposium of Cardiology
Present: Mini Conference – Mitral Valve Replacement: bad heart, bad
valves and reoperations
Rio de Janeiro, Brazil
- July 10, 2014 Advanced Surgical Valve Training
Present: A Programmatic Approach to Aortic Stenosis; Which Valve?
Which Size?
Dallas, TX
- June 17, 2014 Midwest Valve Symposium
Present: A Programmatic Approach to Aortic Stenosis
Chicago, IL
- May 8, 2014 Valves in the Heart of the Big Apple
Present: Advances in Aortic Valve Surgery
New York, NY
- March 14, 2014 The University of Texas Medical School at Houston
The Department of Cardiothoracic & Vascular Surgery
Present: Grand Rounds, New Concepts in Aortic Valve Surgery
Houston, TX
- January 27, 2014 STS Annual Conference
Present: Implementation of a Surgical Curriculum in Cardiothoracic
Surgery
Orlando, FL
- October 2, 2013 IBM Research Colloquium ; Cognitive Systems: The New Era of
Computing
Present: The Cognitive Economy: Decision Making in an Era of
Uncertainty
Yorktown Heights, NY
- June 3, 2013 California Pacific Medical Center Grand Rounds
Present: Mitral valve reoperations
San Francisco, CA
- June 1, 2013 SVS/STS/AATS Symposium: Advances and Controversies in the
Contemporary Management of Complex Thoracoabdominal Aneurysmal
Disease.
Present: The Use of CPB during TAA Repair
San Francisco, CA
- February 12-13 2013: University of Texas Medical Center Grand Rounds
Present: Aortic valve surgery in the 21st Century: An aggressive surgical
strategy. Mitral valve replacement: Bad valves, bad hearts, and
reoperations.
Dallas, TX

DOUGLAS ROSS JOHNSTON, M.D.

- January 26 -29 2013: Society of Thoracic Surgeons Annual Meeting Satellite
Present: Aggressive surgical strategies for aortic stenosis
Los Angeles, CA
- April 18-21, 2012: International Society for Heart and Lung Transplantation
Present: Outcomes after bronchial artery revascularization in lung transplantation.
Prague, Czech Republic
- April 18-21 2012: International Society for Heart and Lung Transplantation
Present: ECMO as a bridge to lung transplantation.
Prague, Czech Republic
- February 23-25 2012: Annual Case Based Conference in Cardiovascular Disease
Present: Surgical treatment of radiation heart disease
Redo coronary artery bypass grafting
Surgical treatment of mitral valve endocarditis.
Dubai, UAE
- January 29 –
February 1 2012: Society of Thoracic Surgeons Annual Meeting
Present: Fenestrated and branch endografts for the aortic arch
Fort Lauderdale, FL
- October 22, 2011: American College of Cardiology – Meeting of the Kentucky Chapter
Present: Reoperative aortic valve replacement
Mitral valve repair for degenerative disease.
Lexington, KY
- August 22-26 2011: The American Austrian Foundation: Cardiothoracic Surgery
Present: ECMO – Pitfalls and Techniques
Principles of Myocardial Protection
Lung Transplant I
Lung Transplant II
Marginal Donors for Lung Transplant
Failing Lung
Ischemic Mitral Regurgitation
Valvular Cardiomyopathy
Vienna, Austria
- May 5-8, 2011: Middle East Medical Assembly
Present: Advances in Surgical Management of Ischemic Mitral
Regurgitation ; Robotic Cardiac Surgery 2011 ; Challenge of Redo CABG
; Surgical Replacement: Still the gold standard? Which valve for which
patient? ; Newer surgical techniques: Repair for all?
Beirut, Lebanon
- April 5-8, 2011: EPIC Spring Advisory Council Meeting
Present: Problem Oriented Charting
Verona, WI
- November 17-18, 2010: VEITHsymposium
Present: New Horizons in Cardiovascular Surgery: Management
of Aortic Disease
New York, NY

DOUGLAS ROSS JOHNSTON, M.D.

- October 4, 2010: NIH-Academia-Industry Workshop on Innovation in Healthcare Intelligence
Present: Smart Electronic Medical Record
Washington DC
- August 28 – September 2, 2010: The American Austrian Foundation
Salzburg Medical Seminars International
Present: Reoperative AVR, Valve Spring Aortic Root Surgery, Aortic Valve Endocarditis, Complex Multivalve Endocarditis, Aortic Valve Repair, Education in Cardiac Surgery
Salzburg, Austria

PUBLICATIONS:

1. Kakavand, M, F Stembal, L Chen, R Mahboubi, H Layoun, S C. Harb, F Xiang, et al. 2024. "Contemporary Experience with the Commando Procedure for Anterior Mitral Annular Calcification." In *JTCVS OPEN*, 18:12–30. ELSEVIER.
2. L G., B F. Rosinski, K Miletic, K Hodges, J Rajeswaran, B Griffin, M Y. Desai, et al. 2023. "Effect of Ascending Aorta Replacement on the Long-Term Outcomes of Bicuspid Aortic Valve Repair." In *J Thorac Cardiovasc Surg*, 166:1561-1571.e8.
3. Mahboubi R, Kakavand M, Soltesz EG, Rajeswaran J, Blackstone EH, Svensson LG, **Johnston DR**. The decreasing risk of reoperative aortic valve replacement: Implications for valve choice and transcatheter therapy. *J Thorac Cardiovasc Surg*. 2022 Mar 16:S0022-5223(22)00334-8. Online ahead of print.
4. Chen L, Mahboubi R, Kakavand M, Erten O, Blackstone EH, **Johnston DR**. Improvements in Outcomes and Expanding Indications for the Commando Procedure. Comment on Giambuzzi et al. Surgical Aortic Mitral Curtain Replacement: Systematic Review and Metanalysis of Early and Long-Term Results. *J. Clin. Med*. 2021, 10, 3163. *J Clin Med*. 2022 Feb 21;11(4):1125.
5. Bavaria JE, Griffith B, Heimansohn DA, Rozanski J, **Johnston DR**, Bartus K, Girardi LN, Beaver T, Takayama H, Mumtaz MA, Rosengart TK, Starnes V, Timek TA, Boateng P, Ryan W, Cornwell LD, Blackstone EH, Borger MA, Pibarot P, Thourani VH, Svensson LG, Puskas JD; COMMENCE Trial Investigators. Five-year Outcomes of the COMMENCE Trial Investigating Aortic Valve Replacement with RESILIA Tissue. *Ann Thorac Surg*. 2022 Jan 19: Online ahead of print.
6. Frankel WC, **Johnston DR**, Weiss AJ. Commentary: If you can't ride 2 horses at once, you shouldn't be in the circus. *J Thorac Cardiovasc Surg*. 2021 Dec 10. Online ahead of print
7. Iacona GM, Unai S, **Johnston DR**. Radical pericardiectomy for pericardial diseases. *Multimed Man Cardiothorac Surg*. 2021 Oct 25;2021
8. Yun JJ, Saleh OA, Chung JW, Bakaeen FG, Unai S, Tong MZ, Roselli EE, **Johnston DR**, Soltesz EG, Rajeswaran J, Kapadia S, Blackstone EH, Pettersson GB, Gillinov AM, Svensson LG. Cardiac Operations After Transcatheter Aortic Valve Replacement. *Ann Thorac Surg*. 2021 Nov 17:S0003-4975(21)01910-X. Online

DOUGLAS ROSS JOHNSTON, M.D.

9. **Johnston DR**, Gillinov AM. Is there a "one size fits all" minimally invasive approach for valve surgery? *Ann Thorac Surg*. 2021 Nov 12:S0003-4975(21)01894-4.. Online ahead of print
10. **Johnston DR**, Mabboubi R, Soltesz EG, Artis A, Roselli EE, Blackstone EH, Svensson LG et al. Redefining "low risk"; Outcomes of surgical aortic valve replacement in low risk patients in the transcatheter aortic valve replacement era. *J Thorac Cardiovasc Surg* 2021 In Press.
11. Chemtob RA, Sale S, Wyler D, Mehta A, Hauser M, Wallace L, Soltesz E, Wierup P, Roselli EE, Svensson LG, **Johnston DR**. Postpump Aortic Insufficiency Is Transient After Valve Replacement with a Novel Prosthesis. *J Am Soc Echocardiogr*. 2021 Sep;34(9):1017-1019.
12. Sharma V, Chen K, Alansari SAR, Verma B, Soltesz EG, **Johnston DR**, Tong MZ, Roselli EE, Wierup P, Pettersson GB, Gillinov AM, Ellis SG, Simpfordorfer C, Blackstone EH, Kapadia S, Svensson LG, Bakaeen FG. Outcomes of Early Coronary Angiography or Revascularization After Cardiac Surgery. *Ann Thorac Surg*. 2021 May;111(5):1494-1501.
13. Yongue C, Lopez DC, Soltesz EG, Roselli EE, Bakaeen FG, Gillinov AM, Pettersson GB, Semple ME, Rajeswaran J, Tong MZ, Jaber W, Blackstone EH, Svensson LG, **Johnston DR**. Durability and Performance of 2298 Trifecta Aortic Valve Prostheses: A Propensity-Matched Analysis. *Ann Thorac Surg*. 2021 Apr;111(4):1198-1205.
14. Miletic KG, Kindzelski BA, Hodges KE, Beach J, Tong MZ, Bakaeen F, **Johnston DR**, Desai M, Lyden S, Roselli EE. Impact of Endovascular False Lumen Embolization on Thoracic Aortic Remodeling in Chronic Dissection. *Ann Thorac Surg*. 2021 Feb;111(2):495-501.
15. Kindzelski BA, Bakaeen FG, Tong MZ, Roselli EE, Soltesz EG, **Johnston DR**, Wierup P, Pettersson GB, Houghtaling PL, Blackstone EH, Gillinov AM, Svensson LG. Modern practice and outcomes of reoperative cardiac surgery. *J Thorac Cardiovasc Surg*. 2021 Jan 23:S0022-5223(21)00125-2. Online ahead of print.
16. Attia T, Svensson LG, Toth AJ, Rajeswaran J, Blackstone EH, **Johnston DR**. Similar long-term survival after isolated bioprosthetic versus mechanical aortic valve replacement: A propensity-matched analysis. *J Thorac Cardiovasc Surg*. 2021 Jan 20:S0022-5223(21)000059-3. Online ahead of print.
17. Levack MM, Kindzelski BA, Miletic KG, Vargo PR, Bakaeen FG, **Johnston DR**, Rajeswaran J, Blackstone EH, Roselli EE. Adjunctive endovascular balloon fracture fenestration for chronic aortic dissection. *J Thorac Cardiovasc Surg*. 2020 Oct 7:S0022-5223(20)32711-2. Online ahead of print.
18. Dunn AN, Donnellan E, **Johnston DR**, Alashi A, Reed GW, Jellis C, Krishnaswamy A, Gillinov AM, Svensson LG, Ellis S, Griffin BP, Kapadia SR, Pettersson GB, Desai MY. Long-Term Outcomes of Patients With Mediastinal Radiation-Associated Coronary Artery Disease Undergoing Coronary Revascularization With Percutaneous Coronary Intervention and Coronary Artery Bypass Grafting. *Circulation*. 2020 Oct 6;142(14):1399-1401
19. Siddiqi S, Ravichandren K, Soltesz EG, **Johnston DR**, Roselli EE, Tong MZ, Navia JL, Elgharably H, Ayyat K, Houghtaling PL, Pettersson GB, Blackstone EH, Svensson LG, Bakaeen FG. Coronary Artery Bypass Graft Patency and Survival in Patients on Dialysis. *J Surg Res*. 2020 Oct;254:1-6.
20. Witten JC, Durbak E, Houghtaling PL, Unai S, Roselli EE, Bakaeen FG, **Johnston DR**, Svensson LG, Jaber W, Blackstone EH, Pettersson GB. Performance and Durability of Cryopreserved Allograft Aortic Valve Replacements. *Ann Thorac Surg*. 2020 Sep 25:S0003-4975(20)31534-4. Online ahead of print.
21. Karamliou T, **Johnston DR**, Backer CL, Roselli EE, Welke KF, Caldarone CA, Svensson LG. Access or excess? Examining the argument for regionalized cardiac care. *J Thorac Cardiovasc Surg*. 2020 Sep;160(3):813-819

DOUGLAS ROSS JOHNSTON, M.D.

22. Nelson JS, Maul TM, Wearden PD, Najm HK, Baloglu O, **Johnston DR**, Karamlou T. Aortic Valve Replacement in Young and Middle-Aged Adults: Current and Potential Roles of TAVR. *Ann Thorac Surg.* 2020 Aug 6:S0003-4975(20)31292-3. Online ahead of print.
23. Chetrit M, Xu B, Kwon DH, Ramchand J, Rodriguez RE, Tan CD, Jellis CL, **Johnston DR**, Renapurkar RD, Cremer PC, Klein AL. Imaging-Guided Therapies for Pericardial Diseases. *JACC Cardiovasc Imaging.* 2020 Jun;13(6):1422-1437.
24. Mokashi SA, Rosinski BF, Desai MY, Griffin BP, Hammer DF, Kalahasti V, **Johnston DR**, Rajeswaran J, Roselli EE, Blackstone EH, Svensson LG. Aortic root replacement with bicuspid valve reimplantation: Are outcomes and valve durability comparable to those of tricuspid valve reimplantation? *J Thorac Cardiovasc Surg.* 2020 May 11:S0022-5223(20)31091-6
25. Bakaeen FG, Ravichandren K, Blackstone EH, Houghtaling PL, Soltesz EG, **Johnston DR**, Mick SL, Navia Bakaeen FG, **Johnston DR**, Svensson LG, Bakaeen FG, et al. Commentary: Coronary artery bypass grafting as a subspecialty: Hype or reality. *J Thorac Cardiovasc Surg.* 2020 Apr 18:S0022-5223(20)30903-X. doi: 10.1016/j.jtcvs.2020.04.013.
26. Isaza N, Desai MY, Kapadia SR, Krishnaswamy A, Rodriguez LL, Grimm RA, Conic JZ, Saijo Y, Roselli EE, Gillinov AM, **Johnston DR**, Svensson LG, Griffin BP, Popović ZB. Long-Term Outcomes in Patients With Mixed Aortic Valve Disease and Preserved Left Ventricular Ejection Fraction. *J Am Heart Assoc.* 2020 Apr 7;9(7):e014591.
27. **Johnston DR**, Griffith BP, Puskas JD, Bavaria JE, Svensson LG, COMMENCE Trial Investigators.; Intermediate-term outcomes of aortic valve replacement using a bioprosthesis. *J Thorac Cardiovasc Surg.* 2020 Feb 21:S0022-5223(20)30474-8. Online ahead of print.
28. JL, Tong MZ, McCurry KR, Akhrass R, Abdallah M, Pettersson GB, Smedira NM, Roselli EE, Gillinov AM, Svensson LG. Coronary Artery Target Selection and Survival After Bilateral Internal Thoracic Artery Grafting. *J Am Coll Cardiol.* 2020 Jan 28;75(3):258-268
29. Chetrit M, Xu B, Kwon DH, Ramchand J, Rodriguez RE, Tan CD, Jellis CL, **Johnston DR**, Renapurkar RD, Cremer PC, Klein AL. Imaging-Guided Therapies for Pericardial Diseases. *JACC Cardiovasc Imaging.* 2019 Nov 9. pii: S1936-878X(19)30879-4
30. Donnellan E, Alashi A, **Johnston DR**, Gillinov AM, Pettersson GB, Svensson LG, Griffin BP, Desai MY. Outcomes of Patients With Mediastinal Radiation-Associated Mitral Valve Disease Undergoing Cardiac Surgery. *Circulation.* 2019 Oct 8; 140(15):1288-1290.
31. Rafiroiu S, Hassouna H, Ahmad U, Koval C, McCurry KR, Pettersson GB, Ibrahim M, **Johnston DR**, Budev M, Murthy S, Toth AJ, Blackstone EH, Tong MZ. Consequences of Delayed Chest Closure During Lung Transplantation. *Ann Thorac Surg.* 2019 Sep 14. Pii: S0003-4975(19)31392-X.
32. Desai MY, Windecker S, Lancellotti P, Bax JJ, Griffin BP, Cahlon O, **Johnston DR**. Prevention, Diagnosis, and Management of Radiation-Associated Cardiac Disease: JACC Scientific Expert Panel. *J Am Coll Cardiol.* 2019 Aug 20; 74(7):905-927.
33. Qamruddin S, Alkharabsheh SK, Sato K, Kumar A, Cremer PC, Chetrit M, **Johnston DR**, Klein AL. Differentiating Constriction from Restriction (from the Mayo Clinic Echocardiographic Criteria). *Am J Cardiol.* 2019 Sep 15; 124(6):932-938.
34. Idrees JJ, Roselli EE, Blackstone EH, Lowry AM, Soltesz EG, **Johnston DR**, Tong MZ, Pettersson GB, Griffin B, Gillinov AM, Svensson LG. Risk of adding prophylactic aorta replacement to a cardiac operation. *J Thorac Cardiovasc Surg.* 2019 May 18. Pii: S0022-5223(19)31039-6.
35. Desai MY, **Johnston DR**, Svensson LG. Radiation-associated cardiac disease: more complicated than just transcatheter replacement of the aortic valve. *Cardiovasc Revasc Med.* 2019 May;20(5):369-370.

DOUGLAS ROSS JOHNSTON, M.D.

36. Rosinski BF, Idrees JJ, Roselli EE, Germano E, Pasadyn SR, Lowry AM, Blackstone EH, **Johnston DR**, Griffin BP, Svensson LG. Cannulation strategies in acute type a dissection repair; a systemic axillary artery approach. *J Thorac Cardiovasc Surg.* 2019 Sep; 158(3):647-659. e5
37. Desai MY, Kalahasti V, Hutt Centeno E, Chen K, Alashi A, Rivas CG, Roselli EE, **Johnston DR**, Griffin BP, Svensson LG. Adult patients with marfan syndrome and ascending aortic surgery. *J Am Coll Cardiol.* 2019 Feb 19; 73(6): 733-734.
38. Unai S, **Johnston DR**. Radical Pericardiectomy for Pericardial Diseases. *Curr Cardiol Rep.* 2019 Feb 12;21(2):6.
39. Bakeen FG, Haddad O, Ibrahim M, Pasadyn SR, Germano E, Mok S, Halbreiner MS, McCurry KR, **Johnston DR**, Mick SL, Navia JL, Roselli EE, Smedira NG, Soltesz EG, Tong MZ, Wierup P, Gillinov AM, Svensson LG, Houghtaling PL, Blackstone EH, Pettersson GB. Advances in managing the noninfected open chest after cardiac surgery: negative-pressure wound therapy. *J Thorac Cardiovasc Surg.* 2019 May; 157(5):1891-1903.
40. Dewan KC, Dewan KS, Idrees JJ, Navale SM, Rosinski BF, Svensson LG, Gillinov AM, **Johnston DR**, Bakeen F, Soltesz EG. Trends and outcomes of cardiovascular surgery in patients with opioid use disorders. *JAMA Surg.* 2019 Mar 1; 154(3):232-240.
41. Donnellan E, Krishnaswamy A, Hutt-Centeno E, **Johnston DR**, Aguilera J, Kapadia SR, Mick S, Svensson LG, Griffin BP, Desai MY. Outcomes of patients with mediastinal radiation-associated severe aortic stenosis undergoing transcatheter aortic valve replacement. *Circulation.* 2018 Oct 16; 138(16): 1752-1754.
42. Ho N, Myles JL, **Johnston DR**, Eicher DM, Kwon DH, Klein AL, Collier P. Pericardial involvement with chronic lymphocytic leukemia/small lymphocytic lymphoma: a rare case of constrictive pericarditis. *CASE (Phila).* 2018 Aug 20; 2(4): 147-150.
43. Desai MY, Jellis CL, Kotecha R, **Johnston DR**, Griffin BP. Radiation-associated cardiac disease: a practical approach to diagnosis and management. *JACC Cardiovasc Imaging.* 2018 Aug; 11(8): 1132-1149.
44. Donnellan E, Griffin BP, **Johnston DR**, Popovic ZB, Alashi A, Kapadia SR, Tuzca EM, Krishnaswamy A, Mick S, Svensson LG, Desai MY. Rate of progression of aortic stenosis and its impact on outcomes in patients with radiation-associated cardiac disease: A matched cohort study. *JACC Cardiovasc Imaging.* 2018 Aug; 11(8): 1072-1080.
45. Huded CP, Kusunose K, Shahid F, Goodman AL, Alashi A, Grimm RA, Gillinov AM, **Johnston DR**, Rodriguez LL, Popovic ZB, Sato K, Svensson LG, Griffin BP, Desai MY. Am J Cardiol. Novel Echocardiographic parameters in patients with aortic stenosis and preserved left ventricular systolic function undergoing surgical aortic valve replacement. *Am J Cardiol.* 2018 Jul 15; 122(2):284-293.
46. Huded CP, Masri A, Kusunose K, Goodman AL, Grimm RA, Gillinov AM, **Johnston DR**, Rodriguez LL, Popovic ZB, Svensson LG, Griffin BP, Desai MY. Outcomes in asymptomatic severe aortic stenosis with preserved ejection fraction undergoing rest and treadmill stress echocardiography. *J Am Heart Assoc.* 2018 Apr 12.
47. Hakim AK, Ahmad U, McCurry KR, **Johnston DR**, Pettersson GB, Budev M, Murthy S, Blackstone EH, Tong MZ. Contemporary outcomes of ECMO used as bridge to lung transplantation. *Ann Thorac Surg* 2018. Mar 17.
48. Roselli EE, Idrees JJ, **Johnston DR**, Eagleton MJ, Desai MY, Svensson LG. Zone zero thoracic endovascular aortic repair: A proposed modification to the classification of landing zones. *J Thorac Cardiovasc Surg* 2018 April; 155:1381- 89.

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49. Zeeshan A, Idrees JJ, **Johnston DR**, Rajeswaran J, Roselli EE, Soltesz EG, Gillinov AM, Griffin B, Grimm R, Hammer DF, Pettersson GB, Blackstone EH, Sabik JF, Svensson LG. Durability of aortic valve cusp repair with and without annular support. *Ann Thorac Surg* 2018 Mar;105: 739-748.
50. Roselli EE, Idrees JJ, Bakaeen FG, Tong MZ, Soltesz EG, Mick S, **Johnston DR**, Eagleton MJ, Menon V, Svensson LG. Evolution of simplified frozen elephant trunk repair for acute DeBakey Type I dissection: Midterm outcomes. *Ann Thorac Surg* 2018;105:749-55.
51. Horr SE, Mentias A, Houghtaling PL, Toth AJ, Blackstone EH, **Johnston DR**, Klein AL. Comparison of outcomes of pericardiocentesis versus surgical pericardial window in patients requiring drainage of pericardial effusions. *Am J Cardiol* 2017. 120:883-890.
52. Steffen RJ, Bakaeen FG, Vargo PR, Kindzelski BA, **Johnston DR**, Roselli EE, Gillinov AM, Svensson LG, Soltesz EG. Impact of cirrhosis in patients who underwent surgical aortic valve replacement. *Am J Cardiol* 2017. 120:648-54.
53. Alashi A, Mentias A, Abdallah A, Feng K, Gillinov AM, Rodriguez LL, **Johnston DR**, Svensson LG, Popovic ZB, Griffin BP, Desai MY. Incremental prognostic utility of left ventricular global longitudinal strain in asymptomatic patients with significant chronic aortic regurgitation and preserved left ventricular ejection fraction. *JACC Cardiovasc Imaging*. 2017 Jun 9.
54. Puskas JD, Bavaria JE, Svensson LG, Blackstone EH, Griffith B, Gammie JS, Heimansohn DA, Sadowski J, Bartus K, **Johnston DR**, Rozanski J, Rosengart T, Girardi LN, Klodell CT, Mumtaz MA, Takayama H, Halkos M, Starnes V, Boateng P, Timek TA, Ryan W, Omer S, Smith CR; COMMENCE Trial Investigators. The COMMENCE trial: 2-year outcomes with an aortic bioprosthesis with RESILIA tissue. *Eur J Cardiothorac Surg*. 2017 Sep 1;52(3):432-439
55. Masri A, Kalahasti V, Svensson LG, Alashi A, Schoenhagen P, Roselli EE, **Johnston DR**, Rodriguez LL, Griffin BP, Desai MY. Aortic cross sectional area/height ratio and outcomes in patients with bicuspid aortic valve and a dilated ascending aorta. *Circ Cardiovasc Imaging*. 2017 Jun 10:e006249.
56. Donnellan E, Masri A, **Johnston DR**, Pettersson GB, Rodriguez LL, Popovic ZB, Roselli EE, Smedira NG, Svensson LG, Griffin BP, Desai MY. Long-Term outcomes of patients with mediastinal radiation-associated severe aortic stenosis and subsequent surgical aortic valve replacement: A matched cohort study. *J Am Heart Assoc* 2017 May 5;6(5)
57. Levack MM, Keshavamurthy S, Schoenhagen P, **Johnston DR**. Management of a duplicated inferior vena cava in thoracoabdominal aortic aneurysm repair. *J Thorac Cardiovasc Surg*. 2017 Mar;153(3):e39-e41.
58. Levack MM, Aftab M, Roselli EE, **Johnston DR**, Soltesz EG, Gillinov AM, Pettersson GB, Griffin B, Grimm R, Hammer DF, Al Kindi AH, Albacker TB, Sepulveda E, Thuita L, Blackstone EH, Sabik JF 3rd, Svensson LG. Outcomes of a less-invasive approach for proximal aortic operations. *Ann Thorac Surg*. 2017 Feb;103(2):533-540.
59. **Johnston DR**. Surgical management of pericardial diseases. *Prog Cardiovasc Dis* 2017 Jan-Feb;59(4):407-416.
60. Roselli EE, Bakaeen FG, **Johnston DR**, Soltesz EG, Tong MZ. Role of the frozen elephant trunk procedure for chronic aortic dissection. *Eur J Cardiothorac Surg*. 2017 Jan;51:i35-39.
61. Masri A, Gillinov AM, **Johnston DR**, Sabik JF, Svensson LG, Rodriguez LL, Kapadia SR, Stewart WJ, Grimm RA, Griffin BP, Desai MY. Anticoagulation versus antiplatelet or no therapy in patients undergoing bioprosthetic valve implantation: a systematic review and meta-analysis. *Heart*. 2017 Jan 1;103(1):40-48.

DOUGLAS ROSS JOHNSTON, M.D.

62. Koprivanac MN, Budev MM, Yun JJ, Kelava M, Pettersson GB, McCurry KR, **Johnston DR**, Mangi AA, Houghtaling PL, Blackstone EH, Murthy SC. How important is coronary artery disease when considering lung transplant candidates? *J Heart Lung Transplant*. 2016 Dec;35(12):1453-1461.
63. Menitas A, Feng K, Alashi A, Rodriguez LL, Gillinov AM, **Johnston DR**, Sabik JF, Svensson LG, Grimm RA, Griffin BP, Desai MY. Long-term outcomes in patients with aortic regurgitation and preserved left ventricular ejection fraction. *J Am Cardiol*. 2016 Nov 15;68(20):2144-2153.
64. Masri A, Kalahasti V, Svensson LG, Roselli EE, **Johnston D**, Hammer D, Schoenhagen P, Griffin BP, Desai MY. Aortic cross-sectional area/height ratio and outcomes in patients with a trileaflet aortic valve and a dilated aorta. *Circulation*. 2016 Nov 29;134(22):1724-1737.
65. Vekstein AM, Idrees JJ, Kapadia S, **Johnston DR**. Open vascular plug placement to complete mitral valve seating in radiation heart disease. *J Thorac Cardiovasc Surg*. 2016 Nov;152(5):e101-102.
66. Bakaeen FG, Roselli EE, **Johnston DR**, Soltesz EG, Tong MZ, Svensson LG. Thoracoabdominal aortic aneurysm repair: big case, big risk, big center! *J Surg Res*. 2016 Nov;2016(1):I-II.
67. Robich MP, Schiltz NK, **Johnston DR**, Mick S, Krishnaswamy A, Iglesias RA, Hang D, Roselli EE, Soltesz EG. Risk factors and outcomes of patients requiring a permanent pacemaker after aortic valve replacement in the United States. *J Surg Res*. 2016 Aug;31(8):476-85.
68. Idrees JJ, Roselli EE, Lowry AM, Reside JM, Javadikasgari H, Johnson DJ, Soltesz EG, **Johnston DR**, Pettersson GB, Blackstone EH, Sabik JF 3rd, Svensson LG. Outcomes after elective proximal aortic replacement: a matched comparison of isolated versus multicomponent operations. *Ann Thorac Surg*. 2016 Jun;101(6):2185-92.
69. Masri A, Kalahasti V, Alkharabsheh S, Svensson LG, Sabik JF, Roselli EE, Hammer D, **Johnston DR**, Collier P, Rodriguez LL, Griffin BP, Desai MY. Characteristics and long-term outcomes of contemporary patients with bicuspid aortic valves. *J Thorac Cardiovasc Surg*. 2016 Jun;151(6):1650-1659.
70. Hussain ST, Srivastava S, **Johnston DR**. Temporary axillofemoral bypass for reperfusion of an ischemic limb complicating type A dissection. *J Thorac Cardiovasc Surg*. 2016 Jun;151(6):e111-3.
71. Idrees JJ, Schiltz NK, **Johnston DR**, Mick S, Smedira NG, Sabik JF 3rd, Blackstone EH, Svensson LG, Soltesz EG. Trends, predictors, and outcomes of stroke after surgical aortic valve replacement in the United States. *Ann Thorac Surg*. 2016 Mar;101(3):927-35.
72. Vekstein AM, Idrees JJ, Kapadia S, **Johnston DR**. Open vascular plug placement to complete mitral valve seating in radiation heart disease. *J Thorac Cardiovasc Surg*. 2016 Nov;152(5):e101-e102.
73. Bakaeen FG, Roselli EE, **Johnston DR**, Soltesz EG, Tong MZ, Svensson LG. Thoracoabdominal aortic aneurysm repair: big case, big risk, big center! *J Surg Res*. 2016 Sep 28.
74. Robich MP, Schiltz NK, **Johnston DR**, Mick S, Krishnaswamy A, Iglesias RA, Hang D, Roselli EE, Soltesz EG. Risk factors and outcomes of patients requiring a permanent pacemaker after aortic valve replacement in the United States. *J Card Surg*. 2016 Aug;31(8):476-85.
75. Idrees JJ, Roselli EE, Lowry AM, Reside JM, Javadikasgari H, Johnson DJ, Soltesz EG, **Johnston DR**, Pettersson GB, Blackstone EH, Sabik JF 3rd, Svensson LG. Outcomes after elective proximal aortic replacement: a matched comparison of isolated versus multicomponent operations. *Ann Thorac Surg*. 2016 Jun;101(6):2185-92.
76. Masri A, Kalahasti V, Alkharabsheh S, Svensson LG, Sabik JF, Roselli EE, Hammer D, **Johnston DR**, Collier P, Rodriguez LL, Griffin BP, Desai MY. Characteristics and long-term outcomes of contemporary patients with bicuspid aortic valves. *J Thorac Cardiovasc Surg*. 2016 Jun;151(6):1650-1659.

DOUGLAS ROSS JOHNSTON, M.D.

77. Hussain ST, Srivastava S, **Johnston DR**. Temporary axillofemoral bypass for reperfusion of an ischemic limb complicating type A dissection. *J Thorac Cardiovasc Surg*. 2016 Jun;151(6):e111-3.
78. Koprivanac M, Budev MM, Yun JJ, Kelava M, Pettersson GB, McCurry KR, **Johnston DR**, Mangi AA, Houghtaling PL, Blackstone EH, Murthy SC. How important is coronary artery disease when considering lung transplant candidates? *J Heart Lung Transplant*. 2016 Mar 30.
79. Idrees JJ, Schlitz NK, **Johnston DR**, Mick S, Smedira NG, Sabik JF 3rd, Blackstone EH, Svensson LG, Soltesz EG. Trends, Predictors, and Outcomes of Stroke After Surgical Aortic Valve Replacement in the United States. *Ann Thorac Surg*. 2016 Mar;101(3):927-35.
80. Roselli EE, Idrees JJ, Lowry AM, Masabni K, Soltesz EG, **Johnston DR**, Kalahasti V, Blackstone EH, Sabik JF 3rd, Lytle BW, Svensson LG. Beyond the aortic root: Staged open and endovascular repair of arch and descending aorta in patients with connective tissue disorders. *Ann Thorac Surg* 2016 Mar;101(3):906-12.
81. Idrees JJ, Schlitz NK, **Johnston DR**, Mick S, Smedira NG, Sabik JF 3rd, Blackstone EH, Svensson LG, Soltesz EG. Trends, predictors and outcomes of stroke after surgical aortic valve replacement in the United States. *Ann Thorac Surg* 2016 Mar; 101(3):927-35.
82. Vivacqua A, Idrees JJ, **Johnston DR**, Soltesz EG, Svensson LG, Roselli EE. Thoracic endovascular repair first for extensive aortic disease: the staged hybrid approach. *Eur J Cardiothorac Surg*. 2016 Mar;49(3):764-9.
83. Idrees JJ, Roselli EE, Lowry AM, Reside JM, Javadikasgari H, Johnson DJ, Soltesz EG, **Johnston DR**, Pettersson G, Blackstone EH, Sabik JF 3rd, Svensson LG. Outcomes after elective proximal aortic replacement: A matched comparison of isolated versus multicomponent operations. *Ann Thorac Surg* 2016 Mar 4.
84. Hall MB, **Johnston DR**, Barth P. Positive pressure bronchoscopy technique: case report. *Ann Otol Rhinol Laryngol*. 2016 Feb;125(2):165-8.
85. Masri A, Kalahasti V, Alkharabsheh S, Svensson LG, Sabik JF, Roselli EE, Hammer D, **Johnston DR**, Collier P, Rodriguez LL, Griffin BP, Desai MY. Characteristics and long-term outcomes of contemporary patients with bicuspid aortic valves. *J Thorac Cardiovasc Surg* 2015 Dec 19.
86. Vargo PR, Schlitz NK, **Johnston DR**, Smedira NG, Moazami N, Blackstone EH, Soltesz EG. Outcomes of cardiac surgery in patients with previous solid organ transplantation (Kidney, Liver and Pancreas). *Am J Cardiol*. 2015 Dec;116(12):1932-8.
87. Tong MZ, Pattakos G, He J, Rajeswaran J, Kattan MW, Barsoum WK, Blackstone EH, **Johnston DR**. Sequentially updated discharge model for optimizing hospital resource use and surgical patient satisfaction. *Ann Thorac Surg* 2015 Dec;100(6):2174-81.
88. Bryant LM, Cognetti D, Baker A, Roy S, **Johnston DR**, Curry J, Kreinb H. Esthetic and functional reconstruction after parotidectomy in pediatric patients – A case series. *Int J Pediatr Otorhinolaryngol*. 2015 Dec;79(12):2442-5.
89. Idrees JJ, Roselli EE, Wojnarski CM, Feng K, Aftab M, **Johnston DR**, Soltesz EG, Sabik JF 3rd, Svensson LG. Prophylactic stage 1 elephant trunk for moderately dilated descending aorta in patients with predominantly proximal disease. *J Thorac Cardiovasc Surg*. 2015 Nov;150(5):1150-5.
90. Hussain ST, Srivastava S, **Johnston DR**. Temporary Axillofemoral bypass for reperfusion of an ischemic limb complicating type A dissection. *J Thorac Cardiovasc Surg*. 2015 Nov 15.

DOUGLAS ROSS JOHNSTON, M.D.

91. Wojnarski CM, Svensson LG, Roselli EE, Idrees JJ, Lowry AM, Ehrlinger J, Pettersson GB, Fillinov AM, **Johnston DR**, Soltesz EG, Navia JL, Hammer DF, Griffin B, Thamilarasan M, Kalahasti V, Sabik JF 3rd, Blackstone EH, Lytle BW. Aortic dissection in patients with bicuspid aortic valve-associated aneurysms. *Ann Thorac Surg.* 2015 Nov;100(5):1666-73.
92. Cremer PC, Rodriguez LL, Griffin BP, Tan CD, Rodriguez ER, **Johnston DR**, Pettersson GB, Menon V. Early bioprosthetic valve failure: mechanistic insights via correlation between echocardiographic and operative findings. *J Am Soc Echocardiogr.* 2015 Oct;28(10):1131-48.
93. Chakravarti R, Gupta K, Swain M, Willard B, Scholtz J, Svensson LG, Roselli EE, Pettersson G, **Johnston DR**, Soltesz EG, Yamashita M, Stuehr D, Daly TM, Hoffman GS. 14-3-3 in thoracic aortic aneurysms: identification of a novel autoantigen in large vessel vasculitis. *Arthritis Rheumatol.* 2015 Jul;67(7):1913-21.
94. Cremer PC, Rodriguez LL, Griffin BP, Tan C, Rodriguez R, **Johnston DR**, Pettersson GB, Menon V. Early bioprosthetic valve failure: a pictorial review of rare causes. *JACC Cardiovasc Imaging.* 2015 Jun;8(6):737-40.
95. **Johnston DR**, Soltesz EG, Vakil N, Rajeswaran J, Roselli EE, Sabik JF 3rd, Smedira NG, Svensson LG, Lytle BW, Blackstone EH. Long-term durability of bioprosthetic aortic valves: implications from 12,569 implants. *Ann Thorac Surg.* 2015 Apr;99(4):1239-47.
96. Idrees JJ, Roselli EE, Arafat A, **Johnston DR**, Svensson LG, Sabik JF 3rd, Pettersson GB. Outcomes after repair or replacement of dysfunctional quadricuspid aortic valve. *J Thorac Cardiovasc Surg.* 2015 Mar 19.
97. Richard J, **Johnston DR**, Price J, Tedford R, Baranowski B, Bassiouny M, Cantillon D, Grimm RA, Tang WH, Varma N, Wilkoff BL. Reverse ventricular remodeling and long-term survival in patients undergoing cardiac resynchronization with surgically versus percutaneously placed left ventricular pacing leads. *Heart Rhythm.* 2015 Mar;12(3):517-23.
98. **Johnston DR**, Roselli EE. Minimally invasive aortic valve surgery: Cleveland Clinic experience. *Ann Cardiothorac Surg.* 2015 Mar;4(2):140-7.
99. Mick SL, Robich MP, Houghtaling PL, Gillinov AM, Soltesz EG, **Johnston DR**, Blackstone EH, Sabik JF 3rd, del Nido versus Buckberg cardioplegia in adult isolated valve surgery. *J Thorac Cardiovasc Surg.* 2015 Feb;149(2):626-634; discussion 634-6.
100. **Johnston DR**. Long-term results of multiple arterial bypass conduits. *Curr Opin Cardiol.* 2014 Nov 29;29(6):542-6.
101. Robich MP, Koch CG, **Johnston DR**, Schiltz N, Chandran Pillai A, Hussain ST, Soltesz EG. Trends in blood utilization in United States cardiac surgical patients. *Transfusion.* 2014 Nov 2.
102. Tong MZ, **Johnston DR**, Pettersson GB. Bronchial artery revascularization in lung transplantation: revival of an abandoned operation. *Curr Opin Organ Transplant.* 2014 Oct ; 19(5):460-7.
103. Roselli EE, Idrees J, Greenberg RK, **Johnston DR**, Lytle BW. Endovascular stent grafting for ascending aorta repair in high-risk patients. *J Thorac Cardiovasc Surg.* 2014 Sep 10.
104. Robich MP, Schiltz N, **Johnston DR**, Mick S, Tse W, Koch C, Soltesz EG. Outcomes of patients with human immunodeficiency virus infection undergoing cardiovascular surgery in the United States. *J Thorac Cardiovasc Surg.* 2014 Aug 4.
105. Trezzi M, Rane AA, Pitas G, **Johnston DR**. Primary undifferentiated sarcoma of the tricuspid valve: a case report. *ANZ J Surg.* 2014 Jul-Aug;84(7-8):592-3.
106. Roselli EE, Abdel-Halim M, **Johnston DR**, Soltesz EG, Greenberg RK, Svensson LG, Sabik JF 3rd. Open Aortic repair after prior thoracic endovascular aortic repair. *Ann Thorac Surg.* 2014 Mar;97(3):750-6.

DOUGLAS ROSS JOHNSTON, M.D.

107. Idrees J, Arafat A, **Johnston DR**, Svensson LG, Roselli EE. Repair of retrograde ascending dissection after descending stent grafting. *J Thorac Cardiovasc Surg*. 2014 Jan;147(1):151-4.
108. Pettersson GB, Karam K, Thuita L, **Johnston DR**, McCurry KR, Kapadia SR, Budev MM, Avery RK, Mason DP, Murthy SC, Blackstone EH. Comparative study of bronchial artery revascularization in lung transplantation. *J Thorac Cardiovasc Surg* 2013:894-900.
109. Beach JM, Mihaljevic T, Svensson LG, Rajeswaran J, Marwick T, Griffin B, **Johnston DR**, Sabik JF 3rd, Blackstone EH. Coronary artery disease and outcomes of aortic valve replacement for severe aortic stenosis. *J Am Coll Cardiol*. 2013 Feb 26;61(8):837-48.
110. Albacker TB, Blackstone EH, Williams SJ, Gillinov AM, Navia JL, Roselli EE, Keshavamurthy S, Pettersson GB, Mihaljevic T, **Johnston DR**, Sabik JF 3rd, Lytle BW, Svensson LG. Should less-invasive aortic valve replacement be avoided in patients with pulmonary dysfunction? *J Thorac Cardiovasc Surg*. 2013 Jan 16.
111. Shafii AE, Mason DP, Brown CR, Vakil N, **Johnston DR**, McCurry KR, Pettersson GB, Murthy SC. Growing experience with extracorporeal membrane oxygenation as a bridge to lung transplantation. PubMed . 2012 Sep-Oct.
112. Ledtke C, Rehm SJ, Fraser TG, Shrestha NK, Tan CD, Rodriguez ER, Tomford JW, Jain A, Lytle B, **Johnston D**, Sabik J, Gordon SM, van Duin D. Endovascular infections caused by *Histoplasma capsulatum*: a case series and review of literature. *Arch Pathol Lab Med*. 2012 Jun;136(6):640-5.
113. Macaron C, Hanounch IA, Suman A, Lopez R, **Johnston D**, Carey WW. Safety of cardiac surgery for patients with cirrhosis and Child-Pugh scores less than 8. *Clin Gastroenterol Hepatol*. 2012 May; 10(5):535-9.
114. Lai JE, **Johnston DR**, Stewart WJ, Vest AR, Menon V. Hemopericardium, shock, and a linear density in the ascending aorta: is it a dissection? *J Am Coll Cardiol*. 2012 Mar 13;59(11):1037
115. Pattakos G, **Johnston DR**, Houghtaling PL, Nowicki ER, Blackstone EH. Preoperative prediction of non-home discharge: a strategy to reduce resource use after cardiac surgery. *J Am Coll Surg*. 2012 Feb;214(2):140-7
116. May CH, **Johnston DR**, Jaber WA, Pettersson GB. A novel approach to the aneurysmal coronary artery fistula. *J Thorac Cardiovasc Surg*. 2012 Jan 27.
117. **Johnston DR**, Atik FA, Rajeswaran J, Blackstone EH, Nowicki ER, Sabik JF 3rd, Mihaljevic T, Gillinov AM, Lytle BW, Svensson LG. Outcomes of less invasive J-incision approach to aortic valve surgery. *J Thorac Cardiovasc Surg*. 2012 Jan 11.
118. Lima B, Roselli EE, Soltesz EG, **Johnston DR**, Pujara AC, Idrees J, Svensson LG. Modified and "reverse" frozen elephant trunk repairs for extensive disease and complications after stent grafting. *Ann Thorac Surg*. 2012 Jan;93(1):103-9; discussion 109. Epub 2011 Nov 16
119. Alfirevic A, Xu M, **Johnston D**, Figueroa P, Koch CG. Transfusion increases the risk for vasoplegia after cardiac operations. *Ann Thorac Surg*. 2011 Sep;92(3):812-9.
120. **Johnston, D.R.**, Gillinov, A.M., Blackstone, E.H., Griffin, B., Stewart, W., Sabik, J.F., Mihaljevic, T., Svensson, L.G., Houghtaling, P.L., Lytle, B.W. Surgical repair of posterior mitral valve prolapse: Implications for guidelines and percutaneous repair. *Ann Thorac Surg*. 2010; 89:1385-94.

DOUGLAS ROSS JOHNSTON, M.D.

121. Verhaert, D, Gabriel, RS, **Johnston D**, Lytle BW, Desai MY, Klein, AL. The role of multimodality imaging in the management of pericardial disease. *Circ Cardiovasc Imaging*. 2010 3:333-43.
122. Shakoor H, Murthy S, Mason D, **Johnston D**, Shah SS, Carrillo MC, Mehta AC. Lobar torsion after lung transplantation – a case report and review of the literature. *Artif Organs*. 2009 Jul;33(7):551-4.
123. Gilani R, Greenberg RK, **Johnston DR**. Isolated limb perfusion with tissue plasminogen activator for acute hand ischemia. *J Vasc Surg* 2009 June 10 EPub.
124. Gillinov A.M., Tantiwongkosri K., Blackstone E.H., Houghtaling P.L., Nowicki E., Sabik J.F. III, **Johnston DR**, Svensson LG, Mihaljevic T. Is prosthetic anuloplasty necessary for durable mitral valve repair? *Ann Thorac Surg* 2009 88:76-82.
125. Gillinov, A.M., Blackstone, E.H., Alaulaqi, A., Sabik J.F.III, Mihaljevic T., Svensson L.G., Houghtaling, P.L., Salemi, A., **Johnston, D.R.**, Lytle, B.W. Outcomes after repair of the anterior mitral leaflet for degenerative disease. *Ann Thorac Surg*. 2008; 86:708-17.
126. Gillinov, A.M., Blackstone, E.H., Nowicki, E.R., Slisatkorn, W, Al-Dossari, G., **Johnston, D.R.**, George, K.M., Houghtaling, P.L., Griffin, B., Svensson, L.G. Valve repair versus valve replacement for degenerative mitral valve disease. *JTCVS*. 2008;135:885-93.
127. Hoerbelt R., Benjamin, L.C., Shoji, T., **Johnston, D.R.**, Muniappan, A., Guenther, D.A., Allan, J.S., Houser, S.L., Madsen, J.C. Effects of tolerance induction on the actions of interferon-gamma on porcine cardiac allografts. *Transplant Proc*. 2006;38:3196-8.
128. Hayashida, K., **Johnston, D.R.**, Goldberger, O., Park, P.W. Syndecan-1 expression in epithelial cells is induced by transforming growth factor beta through a PKA-dependent pathway. *J Biol Chem*. 2006; 281:24365-74.
129. Shoji, T., Wain, J.C., Houser, S.L., Benjamin, L.C., **Johnston, D.R.**, Hoerbelt, R., Hasse, R.S., Lee, R.S., Muniappan, A., Guenther, D.A., Bravard, M.A., Ledgerwood, L.G., Sachs, D.H., Sayegh, M.H., Madsen, J.C., and Allan, J.S. Indirect recognition of MHC class I alloptides accelerates lung allograft rejection in miniature swine. *Am. J. Transplant*. 2005; 5:1626-34.
130. Hoerbelt, R., **Johnston, D.R.**, Shoji, T., Houser, S.L., Hasse, R.S., Ledgerwood, L.G., Iribarne, A., Allan, J.S., Sayegh, M.H., Sachs, D.H., and Madsen, J.C. Combination treatment with donor-specific transfusions and cyclosporine a induces long-term survival of cardiac allografts in miniature swine. *Transplantation* 2005; 80:1275-82.
131. **Johnston, D.R.**, Muniappan, A, Hoerbelt, H., Guenther, D.A., Shoji, T., Houser, S.L., Sachs, D.H., and Madsen, J.C. Heart and en-bloc thymus transplantation in miniature swine. *J. Thorac Cardiovasc Surg* 2005; 130:554-9.
132. **Johnston, D.R.**, Hoerbelt, R., Mezrich, J.D., Shoji, T., Houser, S.L., Ledgerwood, L., Hasse, R.S., Allan, J.S., Sachs, D.H., and Madsen, J.C. A novel technique of en-bloc vascularized heart-thymus transplantation abrogates cardiac allograft rejection. Abstract Presented at the Surgical Forum, Clinical Congress of the American College of Surgeons, October 2003.
133. Mezrich, J.D., Kesselheim, J.A., **Johnston, D.R.**, Yamada, K., Sachs, D.H., and Madsen, J.C. The role of regulatory cells in miniature swine rendered tolerant to cardiac allografts by donor kidney cotransplantation. *Am J Transplant*. 2003 Sep;3(9):1107-15.
134. Menard, M.T., Schwarze, M.L., Allan, J.S., **Johnston, D.R.**, Mawulawde, K., Shimizu, A., Yamada, K., Houser, S.L., Allison, K.S., Sachs, D.H., and Madsen, J.C. Composite 'Thymoheart' Transplantation Improves Cardiac Allograft Survival *Am J Transplant* 2003; 3: 1–8

DOUGLAS ROSS JOHNSTON, M.D.

135. **Johnston, D. R.**, M. H. Sayegh, and J. C. Madsen. 2002. Overcoming cardiac allograft vasculopathy (CAV) by inducing tolerance. *Front Biosci.* 7:e116-e118.
136. **Johnston, D.R.**, Rolls, H. K., Lee, R. S., Illigens, B. M. W., Benichou, G., Madsen, J. C., and Fedoseyeva, E. V. Immune response to cardiac myosin following heart allograft transplantation in miniature swine. Abstract presented at the American Transplant Congress, May 2003.
137. **Johnston, D.R.**, Hoerbelt, R., Shoji, T., Mezrich, J. D., Benjamin, L. C., Houser, S.L., Ledgerwood, L. G., Hasse, R. S., Allan, J.S., Sayegh, M.H., and Madsen, J. C. Indirect allorecognition of MHC class II antigens accelerates cardiac allograft rejection in miniature swine. Abstract presented at the International Society for Heart and Lung Transplantation, April 2003.
138. **Johnston, D.R.**, Hoerbelt, R., Shoji, T., Mezrich, J. D., Houser, S.L., Ledgerwood, L. G., Hasse, R. S., Allan, J.S., Sachs, D. H., and Madsen, J. C. En-bloc vascularized heart and thymus transplantation in miniature swine. Abstract presented at the International Society for Heart and Lung Transplantation, April 2003.
139. Allan, J. S., Lee, R. S., Benjamin, L. C., Mezrich, J. D., Wain, J. C., **Johnston, D.R.**, Houser, S. L., Amoah, H. C., Ledgerwood, L. G., and Madsen, J. C. Recipients of MHC class I disparate lung grafts develop T cell reactivity to donor MHC class I alloptides in an orthotopic swine model. *Journal of Heart and Lung Transplantation* 21(1), 132. 2002.
140. Benjamin, L. C., Allan, J. S., Mezrich, J. D., Houser, S. L., **Johnston, D.R.**, Lee, R. S., Amoah, H. C., Ledgerwood, L. G., Sachs, D. H., and Madsen, J. C. Intracoronary interferon-gamma accelerates cardiac allograft rejection in miniature swine. *Journal of Heart and Lung Transplantation* 21(1), 123. 2002.
141. Mezrich, J. D., Yamada, K., Benjamin, L. C., Sachs, J. A., Kesselheim, J. A., **Johnston, D.R.**, Lee, R. S., Houser, S. L., Amoah, H. C., Ledgerwood, L. G., Allan, J. S., Sachs, D. H., and Madsen, J. C. The role of the thymus in the maintenance phase of tolerance in miniature swine. *Journal of Heart and Lung Transplantation* 21(1), 78-79. 2002.
142. Wu, A., Mezrich, J. D., **Johnston, D.R.**, Monajati, L. M., Mathes, D. W., Baron, C., Yamada, K., Madsen, J. C., and Sachs, D. H. Regulatory cells in the maintenance phase of tolerance in miniature swine: coculture cell mediated lympholysis assay as approach for a tolerance assay. *Journal of Heart and Lung Transplantation* 21(1), 78. 2002.
143. Allan, J. S., Lee, R. S., Benjamin, L. C., Mezrich, J. D., Wain, J. C., **Johnston, D.R.**, Houser, S. L., Amoah, H. C., Ledgerwood, L. G., and Madsen, J. C. T cell reactivity to indirectly presented MHC alloptides develops in miniature swine rejecting class I lung allografts. *American Journal of Transplantation* 2(S3), 217. 2002.
144. Mezrich, J. D., Yamada, K., Benjamin, L. C., Sachs, J. A., Kesselheim, J. A., **Johnston, D.R.**, Lee, R. S., Houser, S. L., Amoah, H. C., Ledgerwood, L. G., Allan, J. S., Sachs, D. H., and Madsen, J. C. The role of the thymus in the maintenance phase of tolerance to heart allografts in miniature swine. *American Journal of Transplantation* 2(S3), 328-329. 2002.
145. Mezrich, J. D., **Johnston, D.R.**, Kesselheim, J. A., Yamada, K., Lee, R. S., Sachs, D. H., Sayegh, M. H., and Madsen, J. C. Regulatory cells in a miniature swine model of cardiac allograft tolerance. *American Journal of Transplantation* 2(S3), 250. 2002.
146. Benjamin, L. C., Allan, J. S., Mezrich, J. D., Houser, S. L., **Johnston, D.R.**, Amoah, H. C., Lee, A., Ledgerwood, L. G., Lee, R. S., and Sachs, D. H. Intracoronary interferon-gamma accelerates cardiac allograft rejection in inbred miniature swine. *Journal of Heart and Lung Transplantation* 21, 123. 2002.

Curriculum Vitae

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EDUCATION

1987 M.D. King Edward Medical College, Pakistan
1986 B.S. University of Punjab, Pakistan

POSTGRADUATE TRAINING

7/01-10/02 Clinical Associate and Chief Resident
Department of Thoracic and Cardiovascular Surgery, Cleveland
Clinic Foundation, Cleveland, OH

1/01-6/01 Specialist Registrar in Cardiothoracic Surgery to Professor Sir
Magdi Yacoub Royal Brompton Hospital, Imperial College of
Medicine and Technology, London, UK

7/98-12/00 Resident in Cardiothoracic Surgery
Beth Israel Deaconess Medical Center, Harvard Medical School,
Boston, MA

7/91-6/98 Resident in General Surgery
Harlem Hospital Center, Columbia University College of Physicians
and Surgeons, NY, NY

7/93-6/95 Postdoctoral Research Fellow, Division of Cardiothoracic Surgery
Columbia-Presbyterian Medical Center, Columbia University
College of Physicians and Surgeons, NY, NY

7/90-6/91 Intern in General Surgery
York Hospital, PA

7/88-6/90 Clinical Research Assistant to Professor Elijah Saunders, MD
University of Maryland Medical Center, Baltimore, MD

ADDITIONAL TRAINING

12/2011 Console Surgeon
Intuitive da Vinci Surgical System

PROFESSIONAL LICENSES

2020 036152081-State of Illinois

2001 35079877-S State of Ohio

1998	157667 Commonwealth of Massachusetts
1994	63338 State of New Jersey
1994	195462 State of New York

ACADEMIC APPOINTMENTS

04/20-Present	Clinical Assistant Professor of Surgery Northwestern University Feinberg School of Medicine
07/18-04/20	Assistant Professor of Department of Surgery SUNY Upstate Medical University

HOSPITAL / CLINIC APPOINTMENTS

04/20-Present	Director, Cardiac Surgery Bluhm Cardiovascular Institute Northwestern Medicine, Northwest Region
7/18-04/20	Attending Staff Division of Cardiac Surgery SUNY Upstate Medical University
5/15-6/18	Attending Staff Aultman Medical Group
11/02-6/18	Attending Staff, Cardiothoracic Surgery Aultman Health Foundation, Canton, OH
7/07-6/18	Attending Staff, Cardiothoracic Surgery Summa Health System, Akron, OH
5/15-11/17	Director, Cardiothoracic Surgery Attending Staff, Cardiac Surgery Aultman Health Foundation, Canton, OH <ul style="list-style-type: none"> • Managed program to be recognized as a Top 50 Cardiovascular Hospital (with a cardiovascular residency program) by IBM Watson Health Study
7/07-5/15	Principal Heart Core, LLC
7/07-12/12	Director, Cardiothoracic Surgery Attending Staff, Cardiothoracic Surgery Mercy Medical Center, Canton, OH <ul style="list-style-type: none"> • Improved program's Ohio State ranking from 36th to 6th • Established region's first robotic cardiac surgery program
7/07-5/15	Principal

	Heart Core, LLC
12/05-6/07	Principal Canton Cardiovascular Surgery, Inc.
11/02-11/05	Associate Canton Cardiovascular Surgery, Inc.

HONORS AND AWARDS

1998	Chief Resident Award for Outstanding Achievement in Surgery, Harlem Hospital Center, Columbia University College of Physicians and Surgeons
1998	Honor for Outstanding Service, New York Health and Hospitals Corporation-Northern Manhattan Network
1994	Prize for Excellence in Research, Harlem Hospital Center, Columbia University College of Physicians and Surgeons

INTERNAL INSTITUTIONAL SERVICE

Department:	CV Surgery Hospital Operations Committee CVOR Operations
Hospital:	Bluhm Cardiovascular Institute Steering Committee NMHC Cardiac, Vascular, & Thoracic Value Analysis Committee Interventional Cardiology Quality Committee

PROFESSIONAL SOCIETY MEMBERSHIP

2005	Society of Thoracic Surgeons
2003	International Society for Minimally Invasive Cardiac Surgery
2003	Stark County Medical Society
2003	Ohio State Medical Association
1999	CTSNet
1999	Massachusetts Medical Society
1990	American Medical Society

PROFESSIONAL LEADERSHIP AND SERVICE

2020-present	Established and maintained STS 3 Stars in CABG category
2025	Achieved STS 3 Stars in Multiprocedural Composite Rating

2005 Founder, Carbothermic Systems, Inc.

- Invented a novel device to non-invasively and selectively cool the brain
- Successfully brought product to market from inception through manufacturing, clinical studies, marketing and sales

GRANTS AND SPONSORED AWARDS

A: None at present

B: Past

Agency: Transonic Systems, Inc and NIH SBIR Phase 1 grant
 ID#: 1R43HL152851-01
 Title: Feasibility of measuring cardiac index using in-line Transonic flow technology in patients on ECMO – a large animal experimental and clinical patient study
 Principal Investigator: Krivitski, Nikolai M.
 Role on project: Co-Principal
 Percent effort: 50
 Direct costs per year: \$69,481
 Total costs for project period: \$281,298
 Project period: 03/2020 – 12/2020

INVITED TALKS

2022 BCVI Cardiovascular Symposium
 2023 BCVI Cardiovascular Symposium

PUBLICATIONS AND SCHOLARLY WORKS

A. Journal Articles

a. Peer-reviewed Original Investigations

- i. Vaidya YP, Cavanaugh SM, **Sandhu AA**. Small aortic annulus. J Card Surg. 2021 Nov; 36;(11):4437.. doi: 10.1111/jos. 15878. Epub 2021 Jul 28
- ii. Vaidya YP, Cavanaugh SM, **Sandhu AA**. Surgical aortic valve replacement in small aortic annulus. J Card Surg. 2021 Jul;36(7): 2502-2509. doi: 10.1111/jos. 15555. Epub 2021 Apr 6
- iii. **Sandhu AA**, Spotnitz HM, Dickstein ML, Rose EA, Michler RE. Retrograde cardioplegia preserves myocardial function after induced coronary air embolism. Journal of Thoracic and Cardiovascular Surgery 1997; 113: 917-22. doi: 10.1016/S0022-5223(97)70265-4
- iv. Schwartz AE, Stone JG, Pile-Spellman J, Finck AD, **Sandhu AA**, Mongero LB, Michler RE. Technical developments and instrumentation: Selective cerebral hypothermia by transfemoral internal carotid artery catheterization. Radiology 1996; 201: 571-2. doi: 10.1148/radiology.201.2.8888261
- v. Schwartz AE, Minanov O, Stone JG, Adams DC, **Sandhu AA**, Pearson ME, Kwiatkowski P, Young WL, Michler RE.

- Phenylephrine increases cerebral blood flow during low-flow cardiopulmonary bypass in baboons. *Anesthesiology* 1996; 85: 380-4. doi: 10.1097/00000542-199608000-00020
- vi. Schwartz AE, Stone JH, Finck AD, **Sandhu AA**, Mongero LB, Adams DC, Jonassen AE, Youg WL, Michler RE. Isolated cerebral hypothermia by single carotid artery perfusion of extracorporeally cooled blood in baboons. *Neurosurgery* 1996 Sep;39(3):577-81; discussion 581-2. doi: 10.1097/00006123-199609000-00028
 - vii. **Sandhu AA**, Schwartz AE, Stone JG, Finck AD, Kwiatkowski P, Mongero LB, Michler RE. Selective brain cooling. *Surgical Forum* 1995; 46: 292-4.
 - viii. Michler RE, **Sandhu AA**, Young WL, Schwartz AE. Low flow cardiopulmonary bypass: The importance of blood pressure in maintaining cerebral blood flow. *Annals of Thoracic Surgery* 1995; 60: S525-28.
 - ix. Schwartz AE, **Sandhu AA**, Kaplon RI, Young WL, Jonassen AE, Adams DC, Edwards NM, Sistino JJ, Kwiatkowski P, Michler RE. Cerebral blood flow is determined by arterial pressure and not cardiopulmonary bypass flow rate. *Annals of Thoracic Surgery* 1995; 60: 165-70.
 - x. Michler RE, **Sandhu AA**. A novel approach for orthotopic heart transplantation in viscerotransposition. *Annals of Thoracic Surgery* 1995; 60: 194-7.
 - xi. **Sandhu AA**, Levowitz B, Freeman HP. Acute gastric volvulus: A surgical emergency. *Contemporary Surgery for Residents* 1994; 2(6): 11-13.
 - xii. Schwartz AE, Minanov O, Stone JG, Adams DC, **Sandhu AA**, Pearson ME, Young WL, Michler RE. Phenylephrine increases cerebral blood flow during low-flow cardiopulmonary bypass. *Canadian Journal of Anesthesiology* 1996; 43(5, Part II): A50 B.
 - xiii. Schwartz AE, Stone JG, Finck AD, **Sandhu AA**, Adams DC, Young WL, Mongero LB, Michler RE. Hypothermia alters the global distribution of cerebral blood flow in baboons.
 - xiv. Stone JG, Schwartz AE, Finck AD, **Sandhu AA**, Adams DC, Wald A, Mongero LB, Michler RE. Brain temperature monitoring during induced hypothermia. *Anesthesiology* 1995; 83:A173.
 - xv. **Sandhu AA**, Schwartz AE, Stone JG, Finck AD, Kwiatkowski P, Mongero LB, Michler RE. Selective brain cooling. *Surgical Forum* 1995; 46: 292-4. Presented at 81st Clinical Congress of the American College of Surgeons, New Orleans, LA, October 22-27, 1995.

- xvi. Michler RE, **Sandhu AA**, Young WL, Schwartz AE. Low flow cardiopulmonary bypass: The importance of pressure in maintaining cerebral blood flow. *Annals of Thoracic Surgery* 1995; 60: S525-28. Presented at 7th Biennial Meeting of the Society of Pediatric Cardiovascular Surgery, Boston, MA, April 20-22, 1995.
- xvii. Schwartz AE, Stone JG, Finck AD, **Sandhu AA**, Olewine RG, Kaplon RJ, Adams DC, Jonassen AE, Kwiatkowski P, Michler RE. Isolated cerebral hypothermia by carotid perfusion in baboons. *Anesthesia and Analgesia* 1995; 80: S421.
- xviii. **Sandhu AA**, Schwartz AE, Stone JG, Finck AD, Olewine RG, Kaplon RJ, Adams DC, Jonassen AE, Kwiatkowski P, Michler RE. Hemodynamic stability during selective brain cooling. *Circulation* 1994; 90: 1-201. Presented at the American Heart Association 67th Scientific Sessions, Dallas, TX, November 14-17, 1994.

B. Patents and Intellectual Property

- i. 8,267,878 Arterial cooling elements for use with a cervical immobilization collar
- ii. 8,267,877 Cervical immobilization collar with arterial cooling elements
- iii. 8,262,597 Cervical immobilization collar with arterial cooling elements and method of using the same
- iv. D644,332 Cervical immobilization collar
- v. D644,331 Cervical immobilization collar
- vi. 7,846,118 Cervical immobilization collar with arterial cooling elements

C. Oral Abstracts / Presentations

- i. Schwartz AE, Minanov O, Stone JG, Adams DC, **Sandhu AA**, Pearson ME, Young WL, Michler RE. Phenylephrine increases cerebral blood flow during low-flow cardiopulmonary bypass. *Canadian Journal of Anesthesiology* 1996; 43(5, Part II): A50 B.
- ii. Schwartz AE, Stone JG, Finck AD, **Sandhu AA**, Adams DC, Young WL, Mongero LB, Michler RE. Hypothermia alters the global distribution of cerebral blood flow in baboons.

- iii. Stone JG, Schwartz AE, Finck AD, **Sandhu AA**, Adams DC, Wald A, Mongero LB, Michler RE. Brain temperature monitoring during induced hypothermia. *Anesthesiology* 1995; 83:A173.
- iv. **Sandhu AA**, Schwartz AE, Stone JG, Finck AD, Kwiatkowski P, Mongero LB, Michler RE. Selective brain cooling. *Surgical Forum* 1995; 46: 292-4. Presented at 81stn Clinical Congress of the American College of Surgeons, New Orleans, LA, October 22-27, 1995.
- v. Michler RE, **Sandhu AA**, Young WL, Schwartz AE. Low flow cardiopulmonary bypass: The importance of pressure in maintaining cerebral blood flow. *Annals of Thoracic Surgery* 1995; 60: S525-28. Presented at 7t Biennial Meeting of the Society of Pediatric Cardiovascular Surgery, Boston, MA, April 20-22, 1995.
- vi. Schwartz AE, Stone JG, Finck AD, **Sandhu AA**, Olewine RG, Kaplon RJ, Adams DC, Jonassen AE, Kwiatkowski P, Michler RE. Isolated cerebral hypothermia by carotid perfusion in baboons. *Anesthesia and Analgesia* 1995; 80: S421.
- vii. **Sandhu AA**, Schwartz AE, Stone JG, Finck AD, Olewine RG, Kaplon RJ, Adams DC, Jonassen AE, Kwiatkowski P, Michler RE. Hemodynamic stability during selective brain cooling. *Circulation* 1994; 90: 1-201. Presented at the American Heart Association 67th Scientific Sessions, Dallas, TX, November 14-17, 1994.
- viii. **Sandhu AA**, Schwartz, AE, Stone JG, Finck AD, Mongero LB, Kwiatkowski P, Michler RE. Selective brain cooling. Presented at the Winter Meeting of the New York Society for Thoracic Surgery, New York, NY, February 16, 1995.
- ix. Schwartz AE, **Sandhu AA**, Kaplon RJ, Young WL, Jonassen AE, Adams DC, Edwards NM, Sistino JJ, Kwiatkowski P, Michler RE. Arterial blood pressure and not pump flow rate regulates cerebral blood flow during cardiopulmonary bypass in baboons. Presented at the 9th European Congress of Anesthesiology, Jerusalem, Israel, October, 1994.

D. Poster Abstracts / Presentations

- i. Vaidya Y, **Sandhu AA**. The role of extracorporeal membrane oxygenation in successful management of cardiopulmonary failure in catastrophic antiphospholipid syndrome. Selected for poster presentation at the Eastern Cardiothoracic Surgical Society (ECTSS) 57th Annual Meeting, Naples, FL, October 16-19, 2019.

MEDIA COVERAGE AND APPEARANCES

"Dr. Aqeel A. Sandhu, MD | McHenry, IL | Thoracic Surgeon | US News Doctors." *U.S. News and World Report*, U.S. News and World Report, 2024, health.usnews.com/doctors/aqeel-sandhu-2796991.

"Aqeel Sandhu, MD - America's Top 50 Doctors - Cardiac Surgeon - Illinois." American Doctors, 2023, www.americandoctorsociety.com/product-page/aqeel-sandhu-md-america-s-top-50-doctors-cardiac-surgeon-illinois.

"Top Ranked Doctors for Coronary Artery Bypass Graft (CABG) Surgery in Illinois." *Dexur.Com*, 2024, dexur.com/gpsr/et/6/p/0/cat/01/rc/0110/st/il/.

"Dr. Aqeel A Sandhu is among the top-ranked Coronary Bypass surgeons in Ohio based on Case Volume 2013-2017." *Dexur.com*, 2024, dexur.com/gpsr/et/6/p/0/cat/01/rc/0110/st/oh/.

Olson, Yadira Sanchez. "'Luckiest Guy in the World': McHenry Hospital Provides Uncommon Care during Common Surgery." *Shaw Local*, Shaw Local, 9 Mar. 2023, www.shawlocal.com/northwest-herald/news/2023/03/09/luckiest-guy-in-the-world-mchenry-hospital-provides-uncommon-care-during-common-surgery/.

Northwestern Medicine. "Northwestern Medicine McHenry Hospital Expands Cardiovascular Services." *Crystal Lake-Cary, IL Patch*, Patch, 13 Mar. 2023, patch.com/illinois/crystallake/northwestern-medicine-mchenry-hospital-expands-cardiovascular-services.

Southern Lakes Newspapers / Rock Valley Publishing Follow this publisher. "Device to Aid Patients with Atrial Fibrillation." *Issuu*, McHenry County News, 27 Oct. 2021, issuu.com/southernlakesnewspapersllc/docs/mc_10.28.21.

Freeman, Jeffery. "Jeffery Freeman on LinkedIn: I Am Posting This as a Thank You; and as Public Service Announcement. I...: 47 Comments." *Jeffery Freeman on LinkedIn: I Am Posting This as a Thank You; and as Public Service Announcement. I... | 47 Comments*, 13 Apr. 2022, www.linkedin.com/posts/jeffery-freeman-26461a14-i-am-posting-this-as-a-thank-you-and-as-activity-6920061458856742912-XUOO?trk=public_profile_like_view.

"Surgeon Spotlight: Aqeel Sandu, MD, at Northwestern Medicine." *Heart Valve Surgery*, 13 Aug. 2021, www.heart-valve-surgery.com/dr-aqeel-sandhu.php.

"Atrial Fibrillation | Cardiac Surgery | SUNY Upstate Medical University." *UpState.Edu*, Healthlink On Air, 23 Aug. 2018, www.upstate.edu/cardiacsurgery/surgical-procedures/atrial-fibrillation.php.

"About Aultman." *Aultman*, Aultman Health Foundation, 2024, aultman.org/home/about/aultman-hospital/mission/.

Writer, Staff. "Mercy to Host Heart Care Program." *Alliance Review*, The Alliance Review, 10 Nov. 2010, www.the-review.com/story/news/local/minerva/2010/11/10/mercy-to-host-heart-care/19315877007/.

SECTION VII. 1120.120 – AVAILABILITY OF FUNDS

Not Applicable – NMHC has a long-term bond rating of AA+ from S&P Global and Aa2 from Moody's Investors Service. See CON #25-030 for documentation.

SECTION VIII. 1120.130 – FINANCIAL VIABILITY

Not Applicable – NMHC has a long-term bond rating of AA+ from S&P Global and Aa2 from Moody's Investors Service. See CON #25-030 for documentation.

SECTION VIII. 1120.140 – ECONOMIC FEASIBILITY

A. Reasonableness of Financing Arrangements

Not Applicable – NMHC has a long-term bond rating of AA+ from S&P Global and Aa2 from Moody's Investors Service. See CON #25-030 for documentation.

B. Conditions of Debt Financing

Not Applicable – the proposed project will be funded by cash and securities

C. Reasonableness of Project and Related Costs

Not Applicable – there is no construction or modernization associated with the proposed project

D. Projected Operating Costs

Project Direct Operating Expenses – FY28

Total Direct Operating Costs	\$40,331
Cases	250
Direct Cost per Case	\$161.32

E. Total Effect of the Project on Capital Costs

Projected Capital Costs – FY28

Equivalent Adult Patient Days (All NM LFH)	54,088
Total Project Cost	\$ 2,840,000
Useful Life (years)	7
Total Annual Depreciation	\$ 405,714
Depreciation Cost per Equivalent Patient Day	\$ 7.50

SECTION X. SAFETY NET IMPACT STATEMENT

1. Impact of the project on essential safety net services in the community, including the impact on racial and health care disparities in the community

Northwestern Medicine Lake Forest Hospital (NM LFH) is a state-of-the-art, 210-bed hospital serving the majority of Lake County, Illinois. Since joining Northwestern Memorial HealthCare in 2010, NM LFH has created a seamless pathway to specialty care for its patients throughout the NM health system. Recent and ongoing renovation and expansion is building on NM's long-standing commitment to deliver world-class medicine to the region. A replacement hospital building opened in 2018, and construction is currently underway to expand the emergency department and double the number of medical/surgical beds. Continued transformation of NM LFH promises expansion of essential services, including critical care and access to high-acuity services and advanced therapeutics for residents in Lake County as well as Chicago's north suburbs.

As a pillar in the community, LFH is uniquely positioned to lead efforts to positively impact community health. This mission is accomplished by providing culturally informed care to meet the needs of those who live in the community, maintaining strong relationships with community partners that share our vision of building stronger, healthier communities, and by being a major economic driver in the communities we serve.

Establishing an open heart surgery program at NM LFH will not have a negative impact on essential safety net services. Conversely, it will significantly improve access to essential services by providing needed advanced cardiac care at NM LFH and decreasing travel and transfer times for NM LFH's cardiac catheterization patients. The project will have a positive impact on safety net services in several ways:

- With a robust cardiac catheterization program, the addition of open heart surgery allows for a more comprehensive approach to cardiovascular patient care. Patients can receive a full spectrum of treatment options, ranging from minimally invasive procedures to more complex surgical interventions without the burden of having to travel to a different NM hospital. This comprehensive care model can improve overall access for NM LFH patients needing specialized treatments, ensuring that individuals with heart conditions receive timely and appropriate care with less transportation issues.
- Vista Medical Center East, located less than 9 miles from NM LFH, has temporarily suspended its open heart surgery program. This reduction has impacted the accessibility of critical cardiac care for residents in Lake County. Lake County residents requiring advanced cardiac management have reduced access to hospitals offering the full continuum of cardiovascular services. Expanding NM LFH's cardiovascular services to include open heart

surgery will enable NM to maintain our commitment to serving vulnerable populations while ensuring that patients receive the comprehensive, high-quality, and specialized care they deserve.

- Reduced access to healthcare services in Lake County significantly increased demand for financial assistance at NM LFH in FY24. In FY24, NM LFH delivered the highest percentage of charity care relative to net revenue among hospitals in Lake County. NM LFH is committed to serving the residents in Lake County who are most at risk for poor health outcomes due to challenges with access to care and other needs associated with SDOH. Since 2020, NM LFH has operated a Transitional Care Clinic (TCC) to provide medical and psychosocial support to patients who do not have a primary care physician and face complex challenges navigating the healthcare system following an inpatient or emergency health episode.
- NM LFH operates the Northwestern McGaw Family Medicine Residency at Lake Forest, offering collaboration with community clinical providers to ensure critically needed access to care in the communities we serve. Medical residents help improve access and provide care for patients in some of the most medically underserved communities. The program at NM LFH is dedicated to the education of outstanding family physicians and community leaders. Residents participate in a Spanish immersion program and complete clinical rotations in three locations with different types of patients: inpatients at NM LFH; outpatients at NM Grayslake Outpatient Center; patients in the NM Transitional Care Clinic at NM LFH; and patients at Erie Waukegan. Erie Waukegan, an FQHC that offers a wide range of social services to patients who are economically disadvantaged, is partially funded by NM LFH. NM LFH underwrites the cost of the residency program at Erie Waukegan, which had 24 residents in FY24.

NM LFH cultivates many long-standing relationships with health, community, and social services providers in Lake County. In conjunction with our community partners, NM LFH is working to address SDOH and other needs in the communities we serve. Together, we offer community-based programs and provide in-kind service, leadership and direct financial investment.

This project will allow NM and NM LFH to continue implementing strategies like the following to address the priority health needs of the community:

- Strengthening healthcare access through collaborative partnerships
In a relationship spanning more than 30 years, NMHC and Erie Family Health Centers (Erie) have made it a priority to expand access to primary and preventive health care. Erie serves nearly 90,000 patients annually, providing medical, dental and behavioral health care regardless of the patient's ability to pay at locations across the Chicago area and the north suburbs. On top of existing commitments in FY24, Northwestern Medicine, including NMH and NM LFH, provided grants to Erie totaling nearly \$2 million. The funding supports

transportation, facility improvements, supplies, equipment and staffing at Erie for patients who are medically underserved and at high risk for poor health. In addition to direct funding, NM and Erie work together to coordinate care for Erie patients at NM hospitals for specialty services not available at Erie.

- Increased access to nutrition and physical fitness education, healthy food, and disease prevention education.

NM LFH has enhanced access to nutrition education and fresh produce through collaborations with community organizations, resulting in 515 food assistance requests via the SDOH screening tool and 1,590 NowPow referrals to local resources in Lake County. NM LFH also supports community physical fitness initiatives, exemplified by quarterly fitness classes for a local Spanish-speaking mom's group, where participants learned about exercise options at home and received health education, including breast health resources and cancer prevention nutrition. Additionally, to improve chronic disease prevention education, the Family Medicine Residency has partnered with community organizations, completing over five needs assessments in FY24 to develop tailored health education sessions on topics such as sleep health, influenza, vaccines, and exercise to address specific community needs.

- Increased flu vaccination rates

Annually, Northwestern Medicine provides no cost flu vaccines to communities with higher rates of emergency department visits due to influenza to improve health and wellness in our under-resourced communities. In FY25, NM LFH conducted several community flu clinics, vaccinating community members against influenza, helping them avoid illness and hospitalization.

- Increased behavioral health services and capacity in community settings

The Josselyn Center (Josselyn) is a long-standing behavioral health provider that has provided quality, accessible mental health services in Northeastern Illinois to more than 7,800 clients from 300 communities. Substantial expansion efforts are currently underway, slated to be operationalized in 2026. In FY24, NM, in partnership with Grainger Foundation Inc., provided more than \$775,000 to Josselyn to support their current and 2026 strategic efforts. Beyond funding, the president of NM LFH is proud to serve on Josselyn's board of directors. Additional collaborative efforts between NM and Josselyn are also underway to serve the residents of Lake County.

- Provided drug education and prevention programming

NM LFH hosted 9 Naloxone educational training sessions, providing Narcan to 28 people. Additionally, NM LFH and the NM Grayslake Outpatient Center added a no-cost Naloxone vending machine in the lobby of their emergency departments that has provided medication to over 330 people. This Narcan is available to anyone and everyone at no cost, no questions asked. The availability of Narcan has been linked to decreased opioid-related mortality rates. By providing Narcan to individuals, first responders, and healthcare providers, communities can save lives during overdoses. Training community members in its use empowers them, including friends and family of opioid users, to act effectively in emergencies.

- Provided health education at Beacon Place
Each summer NM LFH partners with Beacon Place in Waukegan to provide health education sessions to students and their mothers, covering a variety of topics such as the importance of physical activity, stress management and mindfulness, nutrition, and healthy recipes. All programming is adapted to be culturally appropriate and is shared with approximately 300 members of Beacon Place. Additionally, in collaboration with the NM LFH Fitness Center, there are quarterly fitness classes offered to the Beacon Place mom's group.
- Provided free blood pressure and A1C diabetes screenings
NM LFH partnered with Roberti House and NIRCO in Waukegan to conduct blood pressure and A1C diabetes screenings for over 200 people. 49% of these individuals screened as high risk and were connected to local resources. Early screenings can lead to timely treatment and significantly reduce the likelihood of severe health complications and death.
- Youth pipeline programs and workforce development
The NM Discovery Program is a local effort to expose students to careers in health care. On one Saturday per month, students attend sessions at NM LFH and other off-site locations that include tours, guest speakers, group discussion and hands-on projects. More than 75% of the students in this program come from under-resourced communities. In FY24, the NM Discovery Program hosted a cohort of 16 students for 8 sessions. In addition to the yearlong cohort, 16 interns were placed in different operating units across NM LFH, NM Grayslake and Glenview campuses. The students had the opportunity to shadow with more than 30 hospital staff members and participated in Lunch and Learns with teams at each site.

NM LFH has continued to grow its partnership with North Chicago High School providing a placement for six students through their work study program for six months of the year. The students were on campus at NM LFH with Supply Chain, BCVI and Patient Transport two days a week, three hours a day. During this time students worked alongside an employee developing working skills. Of the six students who interned, three students remained at NM LFH over the summer to continue gaining work experience, two of those three students were offered permanent positions.

NM hired a new recruiter to work specifically with Lake County workforce partners to recruit staff from low income communities around NM LFH for the hospital expansion such as Waukegan, Zion, Round Lake, and North Chicago. NM staff are proactively providing weekly job opening reports and meeting with each referral to connect them to the appropriate hiring manager.

2. *Impact of the Project on Safety Net Services at Other Hospitals*

The project will not have any adverse impact on safety net services in the community or on the ability of any other healthcare provider to deliver services as all of the projected volume will come from an NM facility. The project will enhance access to specialized cardiovascular care in Lake County.

3. *Impact of discontinuation of a facility or service on remaining safety net providers*

Not Applicable – the project does not include a discontinuation of a facility or service.

NM LFH Charity Care and Medicaid

NM LFH is the leading provider of charity care in Lake County. Over the last decade, the number charity care patients at NM LFH increased by 279% and the number of Medicaid patients increased by 115%. Since 2015, NM LFH has seen the largest percentage growth in Medicaid inpatient care of any Illinois hospital.

Safety Net Information per PA 96-0031			
CHARITY CARE			
Charity (# of patients)	FY22	FY23	FY24
Inpatient	441	325	455
Outpatient	6,295	5,142	7,615
Total	6,736	5,467	8,070
Charity (cost in dollars)			
Inpatient	\$4,892,614	\$2,619,803	\$4,784,384
Outpatient	\$8,289,746	\$5,721,144	\$9,915,676
Total	\$13,182,360	\$8,340,947	\$14,700,060
MEDICAID			
Medicaid (# of patients)	FY22	FY23	FY24
Inpatient	1,583	1,742	1,560
Outpatient	41,470	38,168	39,742
Total	43,053	39,910	41,302
Medicaid (revenue)			
Inpatient	\$16,686,769	\$21,021,025	\$23,575,778
Outpatient	\$33,081,220	\$41,485,613	\$43,453,453
Total	\$49,767,989	\$62,506,638	\$67,029,231

Source: IDPH Annual Hospital Questionnaires

NMHC Community Benefit

During FY24, NMHC contributed \$1.58 billion in community benefits. NMHC is committed to this work as part of its mission to make people better by making medicine better. In fact, NM has added community partnerships as a pillar in its new NM2035 Strategic Plan. This is driven by the belief that strong collaboration with communities and community-based organizations can help drive stronger, healthier communities and individuals. The major components of the \$1.58 billion in community benefits include:

- \$1.19 billion government sponsored indigent healthcare (unreimbursed cost of Medicaid and Medicare).
- \$85.7 million charity care, at cost.
- \$97.4 million education, at cost. This includes the unreimbursed education costs of NMHC's medical residency, fellowship, and internship programs.
- \$52.4 million bad debt, at cost. An important part of NMHC's commitment to providing quality and accessible healthcare is covering the expense of payments that were expected but not received.
- \$70.0 million research, at cost. NMHC provides support to advance medical and scientific research and academic pursuits.
- \$51.9 million subsidized health services, at cost. This includes the uncompensated cost of providing behavioral health service, health education, and information and programs to positively impact the wellness of the community.
- \$6.1 million of other community benefits. NMHC provides community benefits through donations to charitable and community organizations, volunteer efforts, language assistance and translation services for patients and their families, and more.

In FY 2024, NM LFH provided \$186.5 million in community benefits, including \$14.9 million in charity care and \$37.8 million in unreimbursed care for Medicaid patients.

SECTION X. CHARITY CARE INFORMATION

With a mission-driven commitment to providing quality medical care for all, regardless of their ability to pay, NMHC and NLFH maintain their dedication to improve the health of the most medically underserved members of the community.

NM LFH is the leading provider of Charity Care in Lake County.

Northwestern Lake Forest Hospital

	FY22	FY23	FY24
Net Patient Revenue	\$ 452,795,923	\$ 513,662,410	\$ 560,672,323
Amount of Charity Care (charges)	\$ 63,264,363	\$ 41,218,373	\$ 66,908,871
Cost of Charity Care	\$ 13,182,360	\$ 8,340,947	\$ 14,700,060

Northwestern Memorial HealthCare

	FY22	FY23	FY24
Net Patient Revenue	\$7,399,122,793	\$8,095,919,536	\$8,883,681,780
Amount of Charity Care (charges)	\$ 469,227,416	\$ 360,059,649	\$ 496,751,787
Cost of Charity Care	\$ 90,752,502	\$ 67,545,943	\$ 85,721,775

Financial assistance volume increased at Northwestern Memorial HealthCare in FY24 driven by multiple factors:

- Internal enhancements, including improvements to NM's electronic medical record (EMR) system financial assistance module, increased availability of applications at check-in, and proactive outreach streamlined the financial assistance process.
- NMHC increased collaboration and outreach with community clinical providers.
- Illinois' paused enrollment for the HBIA and HBIS programs and the Illinois Medicaid redetermination process drove more patients to apply for financial assistance.