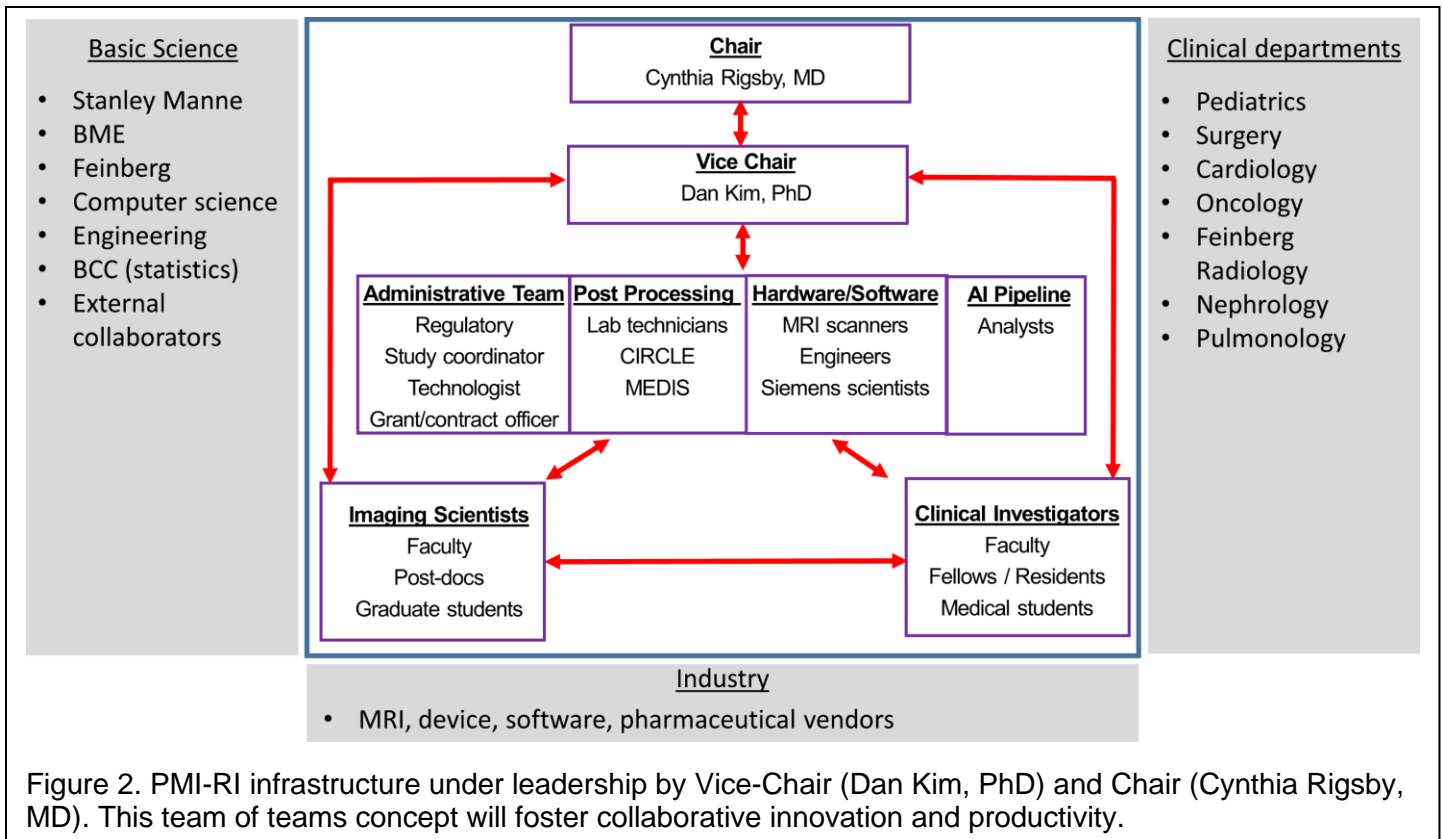
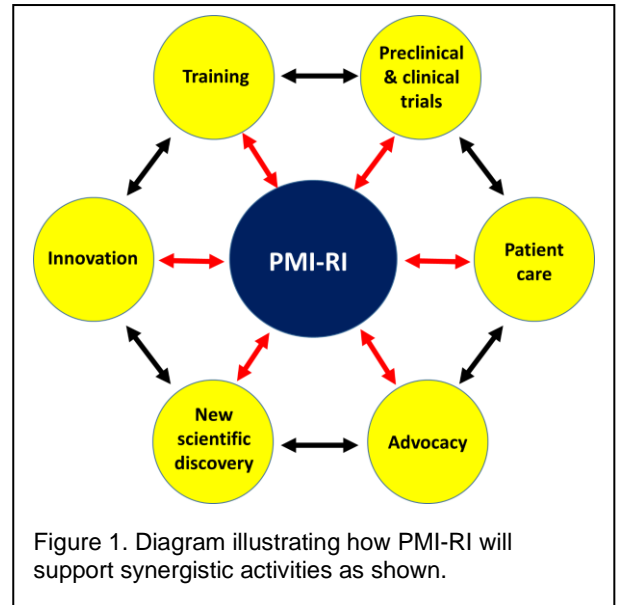


Lurie Medical Imaging Research and Innovation Program

Mission: We seek to establish a world-class program strategically focused on pediatric medical imaging research and innovation (PMI-RI) by leveraging and connecting clinical and research resources and human capital existing at Ann & Robert H. Lurie Children's Hospital of Chicago through leadership. Our goals align with the Lurie Children's mission, *"Research into the prevention, causes, and treatment of diseases that affect children."* As illustrated in Figure 1, our mission is to advance and support the following synergistic activities: *innovation, new scientific discovery, training, advocacy, pre-clinical and clinical trials, and patient care.*

Collaborative infrastructure and the right culture: We seek to build a collaborative infrastructure and a culture that foster *synergy, creativity, diversity, interaction, teamwork, efficiency, and productivity.* Built on resources provided by Lurie Children's Hospital, this infrastructure will be multi-disciplinary by nature and serve as a liaison to basic science (Stanley Manne) and clinical departments, industry, Feinberg School of Medicine, and external entities (see Figure 2).



Servant leadership: Our PMI-RI program will be led by Vice-Chair of Research (Dan Kim, PhD) and Chair of Medical Imaging (Cynthia Rigsby, MD), who will interact, strengthen each other, create synergy, and together support the PMI-RI mission. Dr. Kim will meet regularly with Dr. Rigsby to update progress and plan for the future. Our leadership will focus on the growth and well-being of our community (Medical imaging staff, trainees, and collaborators), such that our program will grow and multiply organically through strengthening of our human resource. We will focus on serving subspecialty sections to build their research innovation – structural interventional procedures, cardiology, transplant, surgery, pediatrics, and oncology. Our program will

be the “boiler room” that helps to fuel and guide the mother ship. We will preach and practice, “a rising tide lifts all boats!”

Interactive activities to build collaboration: Our program will foster interactions and frequent communication amongst members. Examples include weekly communication, joint lab meeting, journal club, mock grant review workshop, research retreat, hosting regional events, cross collaboration with other departments, including radiology at Northwestern, and advanced MRI course.

Educational activities to train future leaders: Our PMI-RI program will be committed to training future leaders (MDs and PhDs); activities include attracting talented pool of applicants, building mentoring teams for fellows, shepherding transition plans following completion of fellowship.

Advocacy activities: Our PMI-RI program will be committed to engaging the local community, satellite and affiliates healthcare systems, and patient advocacy groups to champion the value of medical imaging.

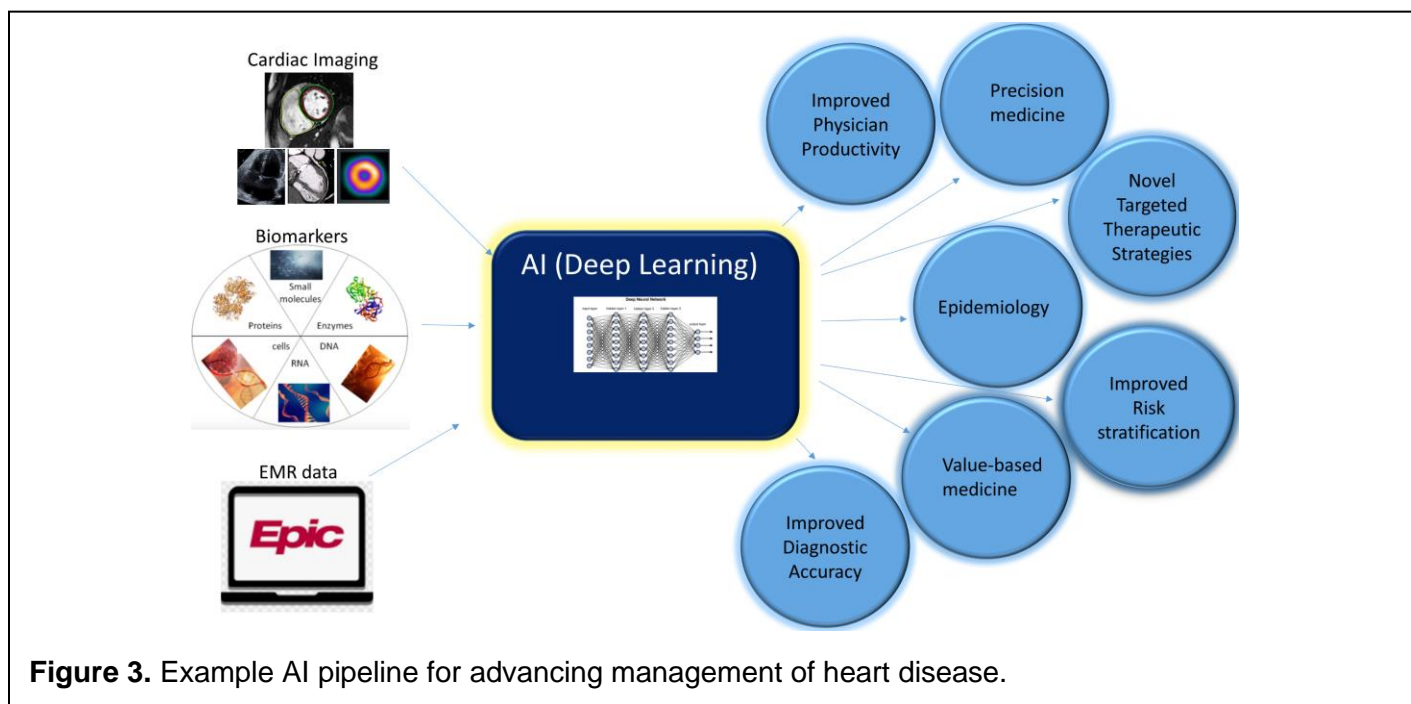
Innovation activities: Our PMI-RI program will be committed to advancing medical imaging technologies through active collaboration with basic scientists, clinicians, vendors, and external collaborators. We will also develop internal and external validation platforms to enhance transparency and reproducibility of new medical imaging technologies.

Scientific discovery activities: Our PMI-RI program will be committed to new scientific discovery through active collaboration with basic scientists, statisticians, and clinicians. Specific activities include development of targeted therapies and determine response to treatment and machine learning/AI for precision medicine and/or value-based medicine.

Pre-clinical and clinical trials: Our PMI-RI program will be committed to pre-clinical and clinical trials to advance therapy and/or intervention, including those initiated by external academic collaborators and vendors for multi-center trials.

Excellent patient care: Our PMI-RI program will be committed to providing excellent patient care through application of innovative medical imaging technologies. We will be committed to discover/optimize/expand accuracy of diagnosis, disease stratification, and prognosis, and deploy validated AI pipeline for individualized personalized precision medicine with medical imaging evaluation.

AI Pipeline: Our PMI-RI program will be committed to employing AI to enhance medical imaging. An example for advancing heart disease is shown in Figure 3.



Timeline and milestones: Given resources, we will build and grow our PMI-RI program to one of the leading pediatric radiology research sites in a 5-year period with the following milestones:

Timeline	Milestones
Year 1	Recruit talented faculty (PhD, MD-PhD, MD) to grow the extramural funding base of the department.
Year 1	Engage Siemens to secure greater commitment of a scientist on site; engage Siemens for joint development and evaluation projects
Year 1	Encourage, incentivize, and enable existing medical Imaging faculty to conduct research; initial grant workshop and mock study section; mentor faculty to write NIH grants.
Year 1	Establish collaboration with clinical and research colleagues within Lurie; attract talented investigators within Lurie and Feinberg to collaborate with us
Year 1	Begin the process of developing, validating, and translating novel medical imaging methods
Year 1	Begin the process of initiating or supporting pre-clinical (large animals) and clinical trials
Year 1	Establish collaboration with NU computer science department for creating an AI pipeline for precision medicine and/or value-based medicine
Year 2	Apply for and secure NIH S10 Instrumentation Grant. Need conditional (grant) commitment from hospital to donate an old (about to retire) 1.5T Siemens scanner for research; “ramp-down” the magnetic field strength to 0.55T; upgrade RF systems to 32 channels; establish a state-of-the art low field MRI system, which would be equivalent to the system existing at NHLBI (Dr. Campbell-Washburn). This system would open opportunities for developing new technologies for interventional MRI, imaging patients with devices, and lung MRI.
Year 2	Apply for and secure T32 training grant (e.g. pediatric cardiac MRI or cardiac imaging)
Year 3	Establish advanced (standardized) MRI protocols throughout Lurie system and satellite hospitals. Export said protocols to external collaborators on Siemens platform
Year 4	Apply for and secure multiple NIH R01 grants (Vice-Chair + other Medical Imaging investigators)
Year 4	Establish advanced pediatric CMR course for outsiders (education + income)
Year 5	Given growth and extramural funds, hire new academic faculty (clinical, research) for expanding the scope and expertise of the program; secure more NIH grants.