

The *Rapid Access* Chest and Lung Assessment Program



Non-specific abnormalities found on chest imaging can present a clinical dilemma for physicians in terms of management and may also cause anxiety for patients. Despite the existence of professional society guidelines for management and follow-up, non-adherence and gaps in management of patients with abnormal findings occur often.^{1,2} Take, for example, the case of PM, a 52-year-old former smoker who presented to her primary care office after multiple episodes of bronchitis. Additional symptoms included wheezing, DOE (dyspnea on exertion), cough, night sweats, and loss of appetite. A diagnostic CT [ordered by the primary care provider] demonstrated enlarged subcarinal and right hilar adenopathy and a right posterior basilar segment lesion measuring 2 x 3.5 cm in size. The patient had made an emergency department visit two years earlier with mild chest symptoms. A CT scan performed at that time had revealed a solitary lung lesion measuring 1.4 x 3.1 cm in size, consistent with a clinical stage IB tumor. The CT scan on page 70 shows a representative view of these findings.

Despite an accurate reading of the films and the radiologist's documented call to PM's primary care provider, no follow-up occurred until the patient became much more symptomatic as described above. Subsequent workup after the new scan led to a diagnosis of stage IV infiltrating poorly-differentiated lung adenocarcinoma. While the reason for lack of further investigation or follow-up is not entirely clear, presumably better communication, vigilance, and adherence to established recommendations would have benefitted this high-risk patient.

To respond to these potential gaps in care, in 2010 Stephen Cattaneo, MD, formed a thoracic oncology working group and implemented the Rapid Access Chest and Lung Assessment Program (RACLAP) at Anne Arundel Medical Center (AAMC) in Annapolis. RACLAP is a multidisciplinary rapid assessment team whose primary objective is to quickly identify, evaluate, and manage patients with abnormal findings on chest imaging while keeping in close communication with a patient's primary care provider. Additionally, RACLAP strives to have patients evaluated by an appropriate specialist within a week of abnormal

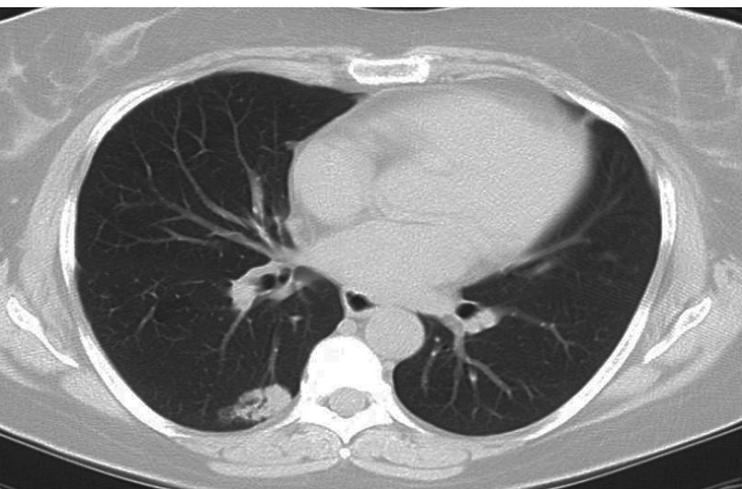
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finding with the understanding that rapid evaluation can help decrease a patient's anxiety. AAMC's Rapid Access Chest and Lung Assessment Program received an ACCC Innovator Award in 2012.

Life before RACLAP

In 2003 AAMC established a weekly multidisciplinary Thoracic Tumor Board comprising thoracic surgeons, medical oncologists, radiation oncologists, pulmonologists, pathologists, radiologists, nurses, and social workers. Two years later, AAMC created a new staff position—the thoracic nurse navigator—to provide physicians, patients, and families with one point of contact in the healthcare system, allowing for a seamless, patient-centered experience. The nurse navigator's responsibility is to facilitate the patient's care for diagnostic testing and physician appointments, as well as to act as a patient advocate and liaison while the patient is receiving care. The thoracic nurse navigator is the central facilitator for the RACLAP program, caring for approximately 300 patients yearly.

Prior to the implementation of RACLAP no standard patient flow existed for thoracic patients. Often lung findings were managed by primary care providers based on recommendations made by the radiologists in imaging reports. However, radiologists



A CT scan of a solitary lung lesion consistent with stage IB tumor.

do not always follow published recommendations, such as Fleischner Society guidelines³ and lack of management standardization for lung findings potentially leads to delays [in treatment] and excess resource utilization.

Primary care physicians, pulmonologists, surgeons, or oncologists managed these patients. However, without an established management paradigm, variance in timeliness, imaging follow-up, and diagnostic interventions was common. Prior to the creation of RACLAP in 2010, the time from a suspicious chest X-ray or CT to diagnosis was 2 to 10 days for inpatients. Unfortunately for outpatients, the time to diagnosis could vary from 12 days to 4 months.

Various international studies seem to suggest that this problem (i.e., variation in timelines) is widespread. In a Canadian study, the median time from development of symptoms to commencement of therapy was 138 days and the authors concluded that lung cancer patients experienced substantial delays to treatment.⁴ In Northern India, a published study found that the median time from symptom to therapy was 185 days but that patients were also inappropriately treated with anti-tubercular treatment first, which significantly prolonged the delay.⁵ Finally, in Brazil, outpatients waited an average of 58.2 days from their first appointment until surgery, while inpatients waited an average of 34.9 days.⁶

Current State

RACLAP's overarching goal is rapid referral to the appropriate specialist via increased centralization of care. Collaboration with various specialties to create an individualized care strategy for patients allows for judicious resource utilization while decreasing time to evaluation and management.

RACLAP provides same-day phone consultation with the thoracic nurse navigator via a centralized and well-publicized phone number. Imaging is reviewed by a combination of thoracic radiologists, pulmonologists, and thoracic surgeons to determine whether expedited referral to a particular specialist or diagnostic procedure is the best initial step. More complicated patient cases are presented initially at AAMC's weekly Thoracic Tumor Board. Referring providers and primary care providers are continually updated about the patient's care plan and results. AAMC's thoracic nurse navigator, social worker, therapists, and other allied professionals assist with concurrent patient and family education to prepare patients for decisions regarding management options and what to expect throughout treatment as well as providing one-on-one support as deemed necessary.

Building & Promoting RACLAP

The initial step in developing RACLAP began with a literature search on evidence-based practices related to building a coordinated thoracic program. Support from hospital administration and collaboration with all the major stakeholders—radiology, pulmonology, thoracic surgery, medical and radiation oncology, and pathology—was key to program development (see Figure 1, right).

RACLAP has a single, direct phone number, which is managed by the thoracic nurse navigator who is responsible for returning calls by the next business day. All inpatient and outpatient providers are encouraged to refer patients to the program. Not surprisingly, radiologists have been the largest referral base since they have initial access to imaging abnormalities. The referral criteria include, but are not limited to:

- Solitary and multiple lung and chest wall lesions
- Mediastinal adenopathy or masses
- Large pleural effusions (particularly unilateral effusions).

All patients with abnormal imaging are eligible for enrollment in RACLAP, including inpatients, outpatients, and emergency department patients.

Once a referral to RACLAP is received, the thoracic nurse navigator contacts the patient's healthcare provider, explains the purpose of RACLAP, and obtains consent to enroll the patient in the program. However, providers are not obligated to enroll patients in RACLAP and may choose to manage the imaging abnormality personally. Once the patient is enrolled, the case is then reviewed to determine the next course of action—direct referral to a specialist or diagnostic intervention and/or presentation at our multidisciplinary Thoracic Tumor Board. The thoracic nurse navigator communicates the plan of care to both the referring provider and the patient and then assists with scheduling additional testing and appointments.

With the program's structure in place and a dedicated phone



line established, RACLAP was promoted throughout the institution at medical staff meetings and through print ads, videos, and the health system's intranet. AAMC also disseminated information to primary care providers, local urgent care centers, and radiology practices in its market.

Benefits & Barriers

The benefits of enrolling the patient in RACLAP include improved centralization of care and patient satisfaction due to decreased stress from timely diagnosis and by minimizing unnecessary procedures and referrals. Additionally, providers with patients in RACLAP benefit from close, evidenced-based follow-up of patients with expert guidance. By eliminating unnecessary referrals or low-value imaging tests and speeding the appropriate work-up, RACLAP reinforces AAMC's goals of population health, including its accountable care organization in which high quality and lower cost processes are valued.

Currently at AAMC, RACLAP is also integrated with the hospital's lung cancer screening program, which is modeled after the National Lung Screening Trial's (NLST) practice of screening high-risk patients for lung cancer with low-dose CT. All screening participants have their results communicated to their primary care provider. If their CT has suspicious findings, patients are

automatically enrolled in RACLAP with the consent of both the patient and their primary care provider.

The United States Preventive Services Task Force (USPSTF) endorses adherence to quality standards for low-dose chest CT, as well as establishing protocols to follow-up on abnormal results. Additionally, it recommends a system be in place to ensure adherence to these standards in order to achieve the mortality benefit of lung cancer screening seen in the NLST. RACLAP provides seamless integration with diagnostic low-dose CT screening so that quality is not compromised and the positive benefits are more readily achieved in a regional setting.

Some of the barriers to full implementation of RACLAP include already established-referral patterns and limited awareness of the program among a large number of radiology providers in the community most of whom do not work at AAMC. Thoracic nurse navigator resources are also stretched by the growth of the program.

Up-to-Date Analysis

Currently, RACLAP data is managed via a desktop spreadsheet by the thoracic program coordinator. One future goal is to establish an IRB-approved registry that is both capable of generating data reports and adept at managing patients who need close follow-up for their lung nodules to ensure timely follow-up and re-evaluation.

RACLAP data was recently published. This analysis was done over a 27-month period in which 238 patients were referred to the RACLAP program—227 patients had an abnormal finding on chest imaging and 11 patients were excluded from data analysis due to various reasons. Of these patients 171 (75 percent) enrolled in the program. Other findings:

- Radiologists were the most frequent referrers
- Patients and primary care providers were contacted within a median of two days after imaging
- The median time from imaging to diagnosis of lung cancer was 16 days.

The authors concluded that the program provided rapid and evidence-based evaluation and management of patients resulting in a short time-to-diagnosis. Table 1, page 72, shows the disposition of the patients who were referred to RACLAP.

We noted a statistically significant shift to a lower cancer stage (IA-IIIB 39 percent) compared to patients who were diagnosed with lung cancer; concurrent controls 25.7 percent and historic controls 27.9 percent (see Table 2, page 72).

The Future of RACLAP

Providers who have referred patients to RACLAP were given the opportunity to express any comments, questions, and concerns
(continued on page 73)

Figure 1. Integration of RACLAP

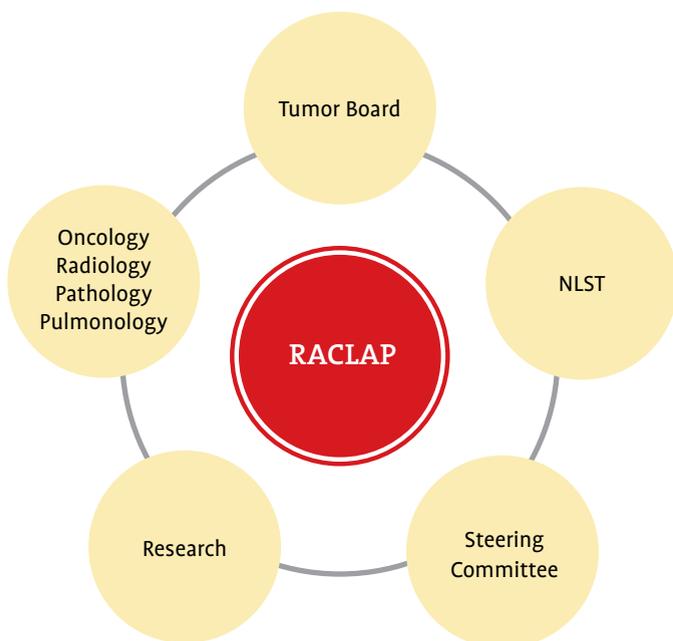


Table 1. Disposition of RACLAP Patients in Published Data Analysis

DISPOSITION OR DIAGNOSIS	NUMBER	PERCENTAGE
Lung cancer	72	31.7
In follow-up surveillance	44	19.4
Other diagnoses	34	15
Primary physician declined; patient followed elsewhere	30	13.2
Issue resolved with follow-up	21	9.2
Unable to contact the patient	18	7.9
Patient declined assistance	8	3.5

Table 2. Lung Cancer Stage in Patients Diagnosed in RACLAP Compared with Controls

STAGE	RACLAP N=72		Concurrent Controls Diagnosed During the Same Period Outside of RACLAP N=378		Historic Controls Diagnosed in the 24 Months Prior to RACLAP N=458	
	NUMBER	PERCENT	NUMBER	PERCENT	NUMBER	PERCENT
0	0	0	1	0.3	0	0
IA	15	20.8	55	14.5	83	18.1
IB	13	18.1	30	7.9	37	8.1
IIA	4	5.6	23	6.1	8	1.7
IIB	5	6.9	15	4.0	24	5.2
IIIA	6	8.3	59	15.6	65	14.2
IIIB	7	9.7	22	5.8	47	10.3
IV	22	30.6	165	43.5	176	38.4
Unknown	0	0	8	2.1	18	3.9



(continued from page 71)

through a brief survey. While physician satisfaction with the program was high, the survey results revealed that areas of potential improvement include educating providers about the program and providing feedback to referring providers in a timelier manner. These issues are being addressed through continued education of providers about the program and improved follow-up. In the future, it will be important to also survey the enrolled patients regarding their level of satisfaction. Other goals include adding new radiology sites that are not directly contracted by AAMC as a referral base and using dedicated thoracic radiologists to review all chest imaging.

In the four years since implementation of RACLAP, more than 530 patients have been managed by the program. There are numerous instances in which patients were rapidly assessed and diagnosed after enrollment. One example is ML, a 72-year-old female. In 11 days, she went from abnormal CXR through rapid referral, PET/CT, and bronchoscopy with biopsy to confirm stage IIIA lung cancer. At the other end of the spectrum is patient NJ, a 57-year-old woman who was enrolled in the program following abnormal CT imaging and was followed with serial surveillance imaging based on low-risk thereby averting unnecessary biopsy and further workup.

RACLAP is able to provide evidence-based evaluation and management of patients with imaging abnormalities in a timely, coordinated way. This benefits both providers who may not feel

comfortable managing abnormal findings on chest imaging and patients who may feel anxiety about what the results may mean. RACLAP has also demonstrated that the program can help in diagnosing lung cancers at earlier stages. As healthcare systems continue to search for ways to provide high quality low-cost care, a program similar to RACLAP may be an inexpensive solution to providing expert, timely care.

References

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OUR PROGRAM-AT-A-GLANCE

Founded in 1902, Anne Arundel Medical Center (AAMC) is a 384-bed regional referral center located on a 57-acre campus in Annapolis, Md. AAMC has a medical staff of more than 1,000 providers and nearly 30,000 inpatient admissions and 95,000 emergency department and 100,000 outpatient visits annually. AAMC includes a not-for-profit hospital, a 200-provider employed medical group, a substance use center, and five regional pavilions with multispecialty services. AAMC also contracts with local physician groups, including radiology, anesthesia, emergency medicine, and pulmonary/critical care medicine. AAMC operates five diagnostic imaging facilities that together perform 159,000 imaging studies annually.

Since 2007, AAMC has experienced steady growth in both its primary and extended market particularly in cardiology, colorectal oncology, and thoracic surgery. More specifically, over the past seven years, the number of new analytic cancer cases evaluated at AAMC has increased 50 percent to a total of 1,800,



making AAMC one of the largest cancer programs in the state.

AAMC serves an area of more than 1 million people and is the state's third busiest hospital based on inpatient discharges. AAMC is the recipient of numerous awards and certifications and recently achieved Magnet® recognition by the American Nurses Credentialing Center.