



## Montefiore Medical Center Receives Top Honors for Treatment of Life-Threatening Emergencies



Montefiore Medical Center

**“If the patient just came from the emergency department, the doctor can look at the chart before scrubbing up and see the patient’s complete cardiology history from either one of our campuses. It’s beautiful.”**

Dmitriy Layvand  
Information Technology Manager  
Montefiore Medical Center

### Montefiore Medical Center Highlights

**Alliance for Quality Health Care Honor Roll:** Montefiore gives patients high quality care in life threatening emergencies. The accessibility of the electronic medical record (EMR) is key to giving physicians a complete picture of the patient's condition in seconds.

**Half a Million Dollar Savings per Year:** Using Apollo to monitor and understand inventory has enabled Montefiore to better negotiate with vendors and realize an ongoing savings of \$500K per year.

**Capture Missed Charges & Shorten the Revenue Cycle:** Montefiore used Apollo to standardize their registration process by capturing insurance, demographic, and procedural information for complete charge capture and billing.

The “hospital report card” from the Alliance for Quality Health Care awarded Montefiore high honors for giving patients a better-than-average chance of surviving the most life threatening emergencies: coronary artery bypass graft mortality rate, acute myocardial infarction, congestive heart failure, acute stroke mortality, pneumonia mortality, and hip fracture mortality. Montefiore's achievement and placement on the Alliance “Honor Roll” makes it one of the top hospitals out of 300 surveyed in the state of New York.

According to Dmitriy Layvand, information technology manager for the Heart Center, “I think Apollo has a lot to do with high quality care in emergencies. We have select terminals with Apollo throughout the hospital, including the emergency department, so physicians can see a patient's cardiovascular record at one glance—echo, cath, pacemaker, EP. It saves time and also creates a much more accurate picture, so physicians can better treat the patient. Or, if the patient just came from the emergency department, the doctor can look at the chart before scrubbing up, and see the patient's complete cardiology history at either one of our campuses. It's beautiful. Before, with separate campuses and separate databases, somebody would have to call the other campus and wait while they pulled up the chart and faxed it. Then that process would

have to be repeated for echo, cath, and all specialties of cardiology. It took an enormous amount of time and was frustrating as well.”

### Critical Decision: Apollo Advance or Homegrown System?

The journey to building their Apollo system started in 1998, when Dmitriy and George Szarka, Heart Center technology administrator, looked for an alternative to their homegrown systems. Dmitriy and George worked with cardiology leadership to choose Apollo, and saw it through implementation, customization, and the development to where it is today.

The first step was deciding between their homegrown systems and a unified outside software solution. According to Dmitriy, the number one reason for choosing Apollo over their homegrown systems was, “Support; a corporation behind the product. That's extremely important. We can rest assured that there will be upgrades; there will be bug fixes. There is somebody that can help us in a crisis; someone who can answer our questions. It's very, very important. You can't beat having a corporation like LUMEDX that has a team of people constantly improving the product.”

### Why Apollo?

Montefiore chose Apollo for a number of reasons. According to Dmitriy, “One, Apollo was an established product that we could start using right away. Two, it was very important for us that Apollo could interface with our hospital information system for demographic and admission information import. Apollo is patient-centric and has very clear organization of patient events under the demographics. Three, it was very important that it was an open-architecture product. In other words, that Apollo runs on the standard Microsoft SQL server, so it could run queries and reports with the standard Microsoft products—Word, Excel, Access. Its open architecture is significant to us because we were planning to do customizations from day one.”

According to George, “We really wanted the ability to customize fields and change the views around, because with regards to databases, our physicians have very specific needs. They had their own homegrown database for a long time and they were used to having it laid out the way they wanted it. The Apollo solution provided the basic framework and could be customized to suit the physicians' needs. It was also important that LUMEDX had a wide installation base.”

### Successfully Coordinated Two Campuses and Standardized Registration

Montefiore faced a challenge with implementation: how to coordinate and unify the processes between two campuses, two separate databases, 25+ labs, 20+ physicians, and a team of staff. According to George, “We changed the processes to unify the way patients are handled in cardiology. Now, there is a guarantee that the patient is always registered, and

#### Montefiore on the Alliance for Quality Health Care Honor Roll:

- Coronary artery bypass graft mortality rate
- Acute myocardial infarction
- Congestive heart failure
- Acute stroke mortality
- Pneumonia mortality
- Hip fracture mortality

#### Honor Roll recipients:

- Treated at least 30 life-threatening cases
- Risk-adjusted mortality rate is significantly lower than the state average using a 95% confidence interval on a given indicator
- 300 hospitals evaluated across New York

View the complete report at [www.myhealthfinder.com](http://www.myhealthfinder.com)

CLICK TO VIEW FULL REPORT:

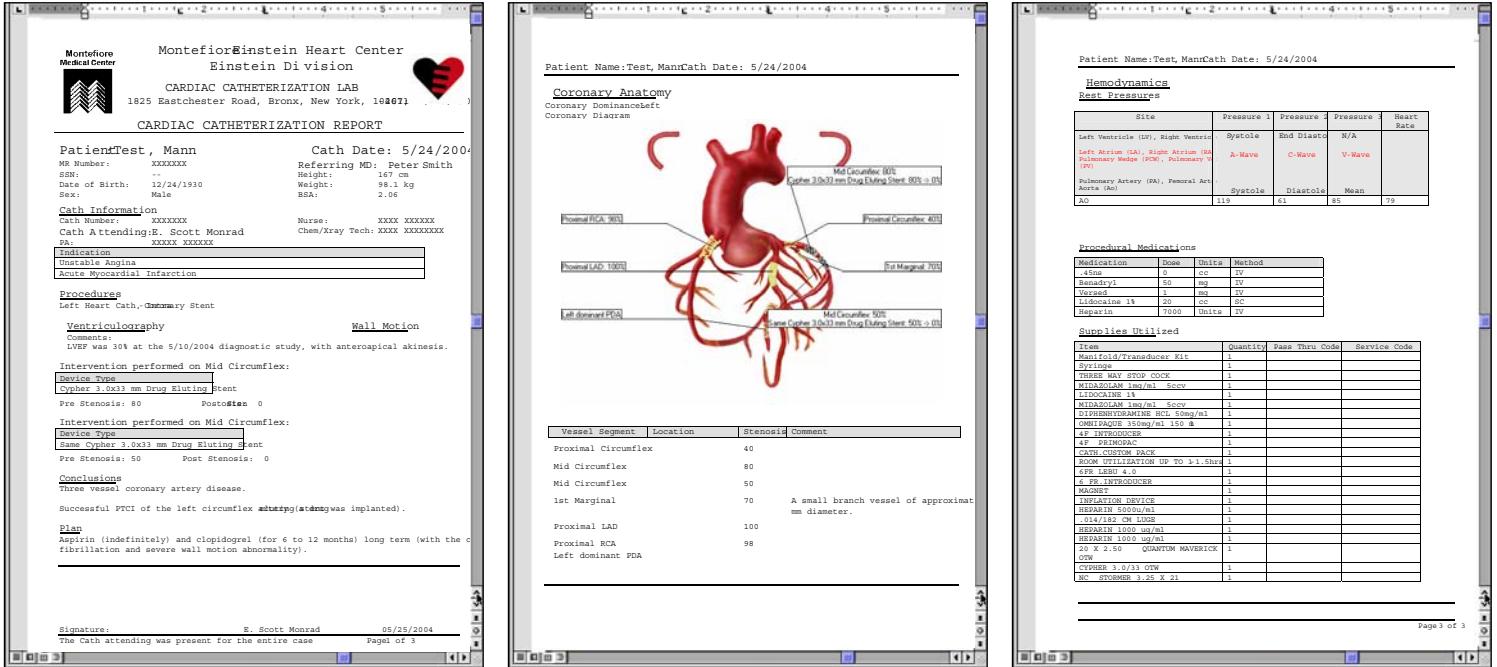


Fig. 1 Sample Pages from Catheterization Report

the patient's demographic, admission and insurance information is identical in the hospital's information system and the Apollo system. This information is entered only once, into the hospital PHAMIS system, and it passes seamlessly to Apollo through the HL7—ADT interface—without human intervention. This, in turn, helps streamline our billing process since the billing system uses the same identifiers and admission information it eliminates ambiguity. Procedural and charge information is entered into Apollo at the time of service, bringing all of the essential data together in a very organized and efficient manner. According to both George and Dmitriy, Apollo has positively impacted their revenue stream and shortened their revenue cycle significantly.

## Apollo Supports Cardiology Team Workflow

The Montefiore cardiology team utilizes Apollo to track critical patient information, including:

- Hemodynamic data
- Demographic data
- Inventory usage
- Case times
- Place the patient originated and the destination (inpatient/outpatient/ambulatory surgery/transfer)
- Type of procedure (urgent/emergent/staged)

Interfaces automatically transfer data from the hospital information system and hemodynamic systems, eliminating the need for staff to enter the data twice. In addition, Montefiore uses laser scanners to capture inventory barcodes and times of procedures. “In the long run,” says Dmitriy, “it shortens the time spent on data entry. Scanning items is obviously much faster than writing items down on paper. In fact, because of the increased organization it actually decreases the overall time spent on administration.”

### **Negotiating Savings of \$500K per Year**

“We worked with our finance and purchasing teams to standardize cath lab inventory and supplies. Before, we did not have a precise and timely count on how many of each type of balloons and stents were being used. It is a hectic environment with patients coming from the emergency department or different floors and there wasn't an efficient means of capturing what was being used. So when we implemented Apollo in the cath lab, it made a big difference not only to make sure that we never ran out of items on the shelf, but also to analyze usage and outcomes. Because we can capture physician preference for stents and balloons, our clinical leadership was able to talk to doctors see if they were willing to compromise and use one equally effective type of stent rather than 10 different types. Apollo allowed us to collect the specific information we needed to negotiate the best purchasing arrangements with our vendors. It also enabled our physicians to selected preferred items. By negotiating between the doctors and the vendors, we have saved about \$500,000 a year, every year, on an ongoing basis, just for that area,” said Dmitriy.

### **Accurately Track Heart Center Volumes, Clinical Outcomes & Operational Efficiency**

In addition to billing and inventory savings, Montefiore has used Apollo to gain an accurate picture on their patient volumes, procedures, and procedure types. According to George, “Apollo eliminates errors by taking hand counting and manual chart review away. Once that happens you can get a real handle on how much it actually costs to operate, in terms of patient supplies, cost per case, etc. When you have that real information in hand, the Heart Center can make better, more informed decisions.” Dmitriy adds, “It provides accurate feedback to everybody as to how we're doing. It gives us a feeling of confidence with our operations. We run financial stats, volume stats, and operational stats. Everything our administration needs to know, we run; starting with the types of patients, types of procedures, how many of each procedure, outcomes, and the referring MDs. All of this data is validated by 16 different checks to ensure our data integrity. At the end of the year we use Apollo to create our annual report submitted to the state. Before, it would take days to go through the charts to find all of that data. Right now, with a few of clicks of the mouse we have the annual report. It provides an excellent dashboard for administration to see how the Heart Center is operating and plan for the future.”

### **Analyzing the Potential for Drug-Eluting Stents (DES)**

Montefiore uses Apollo to track the complications of DES, thrombosis, and re-stenosis. “We were one of the very first sites in the northeast to use DES before they became publicly available, so analysis and planning was very important. We ran many studies to see if those patients with re-stenosis and repeat procedures would have qualified for a DES. We needed to see the potential market for DES in order to plan accordingly.”

## The Future of Montefiore & Apollo

Apollo plays a key role in helping the Heart Center achieve the hospital's goal of becoming paperless. They are currently adding the Cardiothoracic Surgery Module, and once that is complete, all of the major cardiovascular specialties will be integrated. George added, "Integration through technology is a beautiful thing."

**About LUMEDX:** With over 500 heart center clients worldwide, LUMEDX is the market leader in fully integrated cardiovascular information systems and the No. 1 independent integrator of cardiology information solutions. LUMEDX offers the most proven, comprehensive package of clinical information tools, cardiovascular products, and services to help medical institutions enhance quality of patient care, reduce costs, streamline workflow, increase patient volume, and grow revenue.



Montefiore  
Medical Center



## Montefiore-Einstein Heart Center Einstein Division



### CARDIAC CATHETERIZATION LAB

1825 Eastchester Road, Bronx, New York, 10461; (718) 904-2071

## CARDIAC CATHETERIZATION REPORT

### Patient: Test, Mann

MR Number: XXXXXXXX  
SSN: --  
Date of Birth: 12/24/1930  
Sex: Male

### Cath Date: 5/24/2004

Referring MD: Peter Smith  
Height: 167 cm  
Weight: 98.1 kg  
BSA: 2.06

### Cath Information

Cath Number: XXXXXXXX  
Cath Attending: E. Scott Monrad  
PA: XXXXX XXXXXX

Nurse: XXXX XXXXXX  
Chem/Xray Tech: XXXX XXXXXXXX

#### Indication

Unstable Angina
Acute Myocardial Infarction

### Procedures

Left Heart Cath, Intra-Coronary Stent

#### Ventriculography

##### Comments:

LVEF was 30% at the 5/10/2004 diagnostic study, with anteroapical akinesis.

#### Wall Motion

### Intervention performed on Mid Circumflex:

#### Device Type

Cypher 3.0x33 mm Drug Eluting Stent

Pre Stenosis: 80

Post Stenosis: 0

### Intervention performed on Mid Circumflex:

#### Device Type

Same Cypher 3.0x33 mm Drug Eluting Stent

Pre Stenosis: 50

Post Stenosis: 0

### Conclusions

Three vessel coronary artery disease.

Successful PTCl of the left circumflex artery (a drug eluting stent was implanted).

### Plan

Aspirin (indefinitely) and clopidogrel (for 6 to 12 months) long term (with the coumadin for the atrial fibrillation and severe wall motion abnormality).

Signature:

E. Scott Monrad

05/25/2004

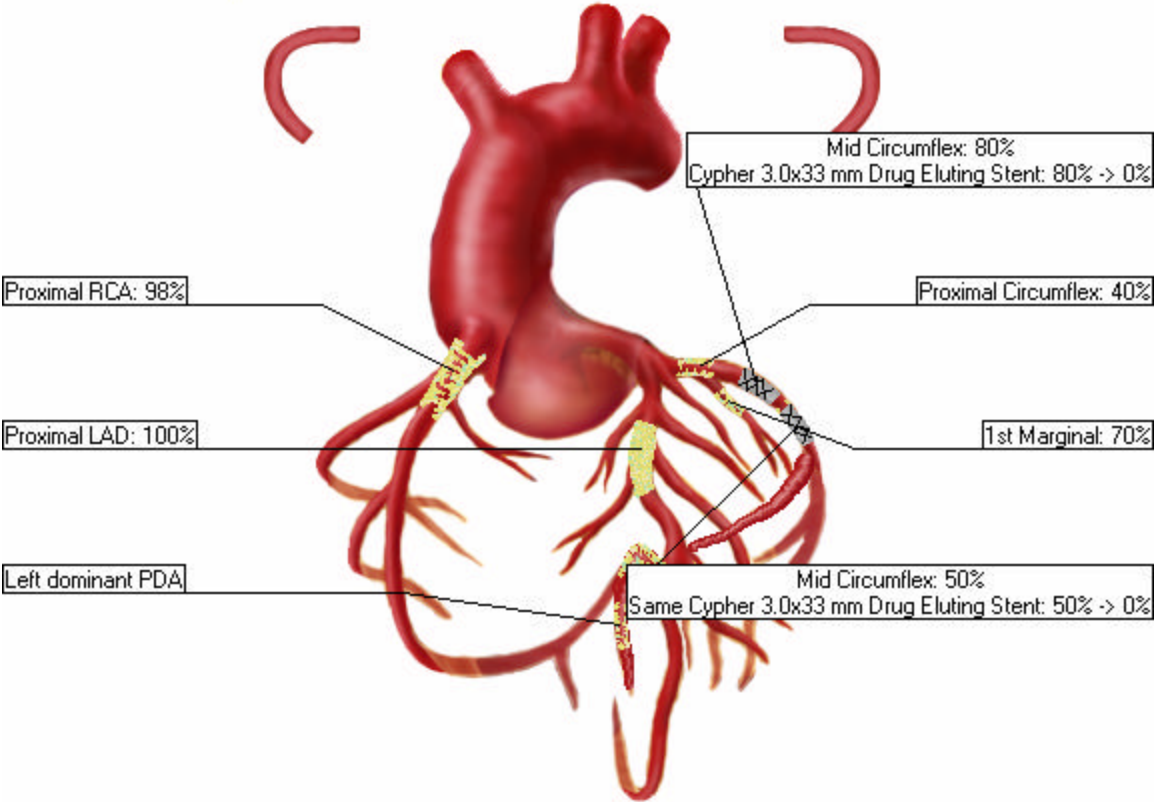
The Cath attending was present for the entire case.

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Patient Name: Test, Mann Cath Date: 5/24/2004

**Coronary Anatomy**

**Coronary Dominance: Left  
Coronary Diagram**



Vessel Segment	Location	Stenosis	Comment
Proximal Circumflex		40	
Mid Circumflex		80	
Mid Circumflex		50	
1st Marginal		70	A small branch vessel of approximately 1 mm diameter.
Proximal LAD		100	
Proximal RCA		98	
Left dominant PDA			

Patient Name: Test, Mann Cath Date: 5/24/2004

## Hemodynamics

### Rest Pressures

Site	Pressure 1	Pressure 2	Pressure 3	Heart Rate
Left Ventricle (LV), Right Ventricle (RV)	Systole	End Diastole	N/A	
Left Atrium (LA), Right Atrium (RA), Pulmonary Wedge (PCW), Pulmonary Vein (PV)	A-Wave	C-Wave	V-Wave	
Pulmonary Artery (PA), Femoral Artery (FA), Aorta (Ao)	Systole	Diastole	Mean	
AO	119	61	85	79

### Procedural Medications

Medication	Dose	Units	Method
.45ns	0	cc	IV
Benadryl	50	mg	IV
Versed	1	mg	IV
Lidocaine 1%	20	cc	SC
Heparin	7000	Units	IV

### Supplies Utilized

Item	Quantity	Pass Thru Code	Service Code
Manifold/Transducer Kit	1		
Syringe	1		
THREE WAY STOP COCK	1		
MIDAZOLAM 1mg/ml 5ccv	1		
LIDOCAINE 1%	1		
MIDAZOLAM 1mg/ml 5ccv	1		
DIPHENHYDRAMINE HCL 50mg/ml	1		
OMNIPAQUE 350mg/ml 150 ml	1		
4F INTRODUCER	1		
4F PRIMOPAC	1		
CATH.CUSTOM PACK	1		
ROOM UTILIZATION UP TO 1 -1.5hrs	1		
6FR LEBU 4.0	1		
6 FR.INTRODUCER	1		
MAGNET	1		
INFLATION DEVICE	1		
HEPARIN 5000u/ml	1		
.014/182 CM LUGE	1		
HEPARIN 1000 ug/ml	1		
HEPARIN 1000 ug/ml	1		
20 X 2.50 QUANTUM MAVERICK OTW	1		
CYPHER 3.0/33 OTW	1		
NC STORMER 3.25 X 21	1		