

Cardiac Case Reviews



Review Panel

- Alyson Kelleher, BSN, RN, CCRN
 - Chest Pain Coordinator at Froedtert Hospital
- Tom Thrash, BS, NRP
 - Battalion Chief of EMS at West Bend Fire Department
- Kenny Asselin, MBA, NRP
 - Captain/Critical Care Paramedic at West Bend Fire Department

Disclosures

Kenny Asselin has holdings in the following medical companies:

- Aveo Pharmaceuticals (AVEO)
- Digirad Corporation (DRAD)
- LTC Properties (LTC)
- Mallinckrodt (MNK)
- Medtronic (MDT)
- United Health Group (UNH)



Goals of Cardiac Catheterization Lab

Benchmark	Description of Measure	Rationale	Key Performance Indicator	Source
EKG Time	Measurement of the time for first capable unit to acquire 12-lead EKG on patients diagnosed with STEMI	Early 12 lead EKG is necessary to identify STEMI	Will obtain a 12 lead ECG within 10 minutes of FMC	EMS Compass Initiative AHA Guidelines
ASA Administration	Percentage of eligible patients with suspected STEMI who receive ASA	ASA may reduce morbidity and mortality with STEMI	ASA will be administered 95% of all eligible patients with STEMI	EMS Compass Initiative AHA Guidelines
Pain Reduction for STEMI	Percentage of eligible patients who receive pain reduction	Analgesia may help lessen discomfort and improve outcomes	Pain reduction strategy (nitrate or analgesic) will be administered to 95% of all eligible STEMI patients	EMS Compass Initiative AHA Guidelines
Scene Time	Measure of time from diagnostic EKG to departure to a PCI center	Minimizing scene time may deliver patient to prepared hospital and receive PCI sooner	Scene time will be < 20 minutes for 95% of all STEMI patients	EMS Compass Initiative AHA Guidelines
Destination	Measure of percentage of suspected STEMI patient transports to facilities capable of PCI/thrombolytic administration	STEMI outcomes are improved at specialized STEMI hospitals	Will deliver STEMI patients to STEMI hospital within 30 minutes of FMC 85% of the time	EMS Compass Initiative AHA Guidelines
FMC to PCI	FMC to Reperfusion	Early reperfusion reduces mortality and morbidity	FMC to reperfusion will be < 90 minutes on all STEMI identified in the field	EMS Compass Initiative AHA Guidelines
D2D2B	Arrival at non-PCI hospital to reperfusion	Early reperfusion reduces mortality and morbidity	D2D2B will be <120 minutes	AHA Guidelines

Basic Life Support vs Advanced Life Support

- **Basic Life Support Unit**
 - **Staffing**
 - Emergency Medical Responder (EMR)
 - Emergency Medical Technician (EMT)
 - Advanced Emergency Medical Technician (AEMT)
 - **Skills**
 - Bandaging and splinting
 - AED and non-visualized airway
- **Advanced Life Support Unit**
 - **Staffing**
 - Paramedics and Critical Care Paramedics
 - **Skills**
 - All basic life support
 - Cardiac interventions
 - Advanced airway and rapid sequence airway
 - Pain control medications



Paramedic Intercepts

West Bend Fire Department Paramedic Intercept Program

- 115 paramedic intercepts in 2017
- Over 300 square miles in Washington, Sheboygan, Fond du Lac, and Dodge Counties
- SUV with 2 paramedics and ALS supplies
- \$300 flat charge to responding department
- Cost savings due to shared service



Interfacility Transfers

West Bend Fire Department Paramedic Interfacility Transfer Program

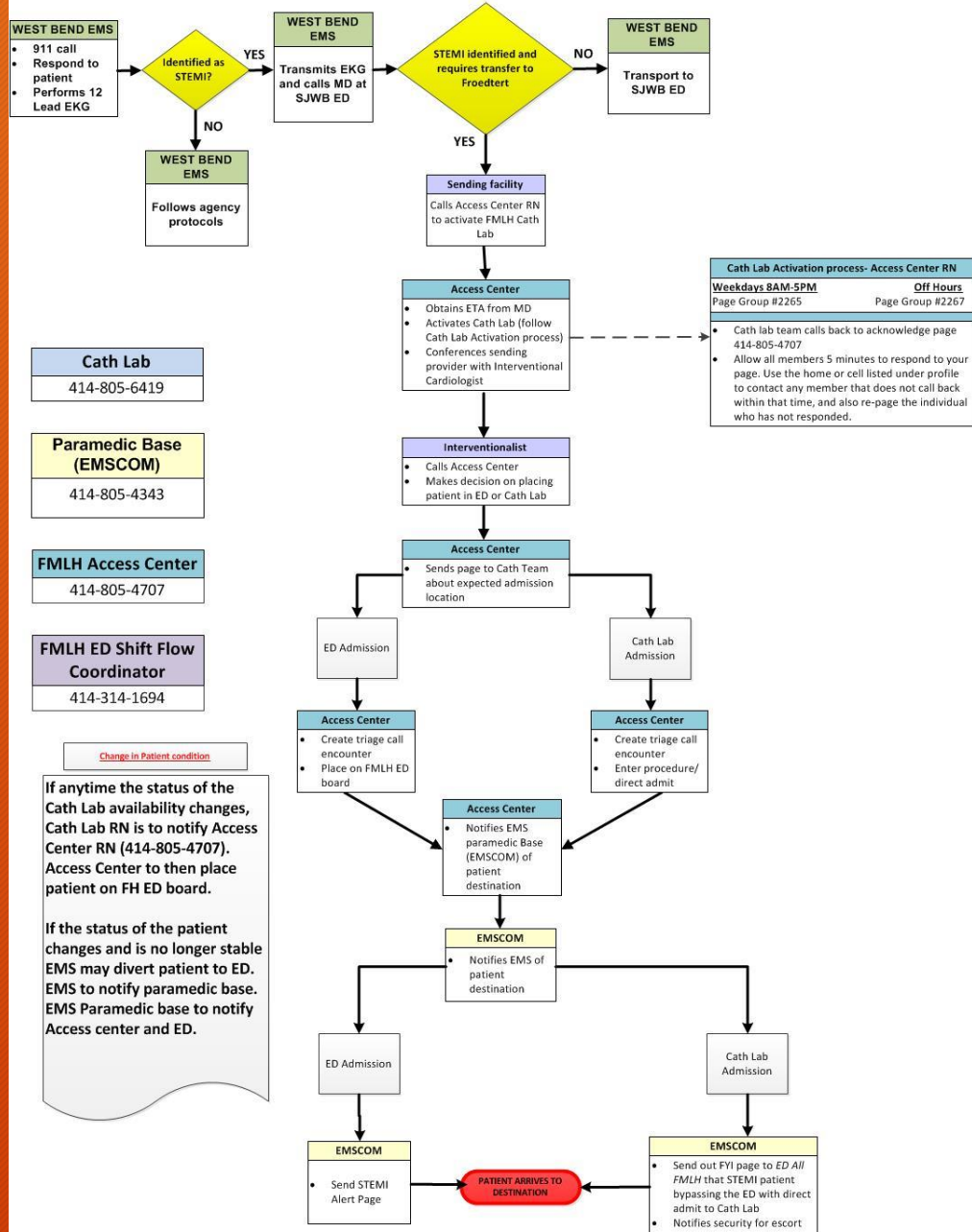
- 421 interfacility transfers in 2017
- Emergent and non-emergent transfers
- Med unit with 3 paramedics
- Response times to St. Joe's and transfer to Froedtert meet goals



Emergency Room Bypass Procedures

West Bend Fire Department and New Berlin Fire Department

- STEMI recognition
- Contact medical control
- Determination of transport time from the scene to Froedtert (greater than 30 minutes for cath lab activation)
- Medical control doctor contacts the access center
- Cath team activated
- Paramedic crew delivers patient directly to the cath lab
- Health care savings of several thousand dollars



Cath Lab
414-805-6419

Paramedic Base (EMSCOM)
414-805-4343

FMLH Access Center
414-805-4707

FMLH ED Shift Flow Coordinator
414-314-1694

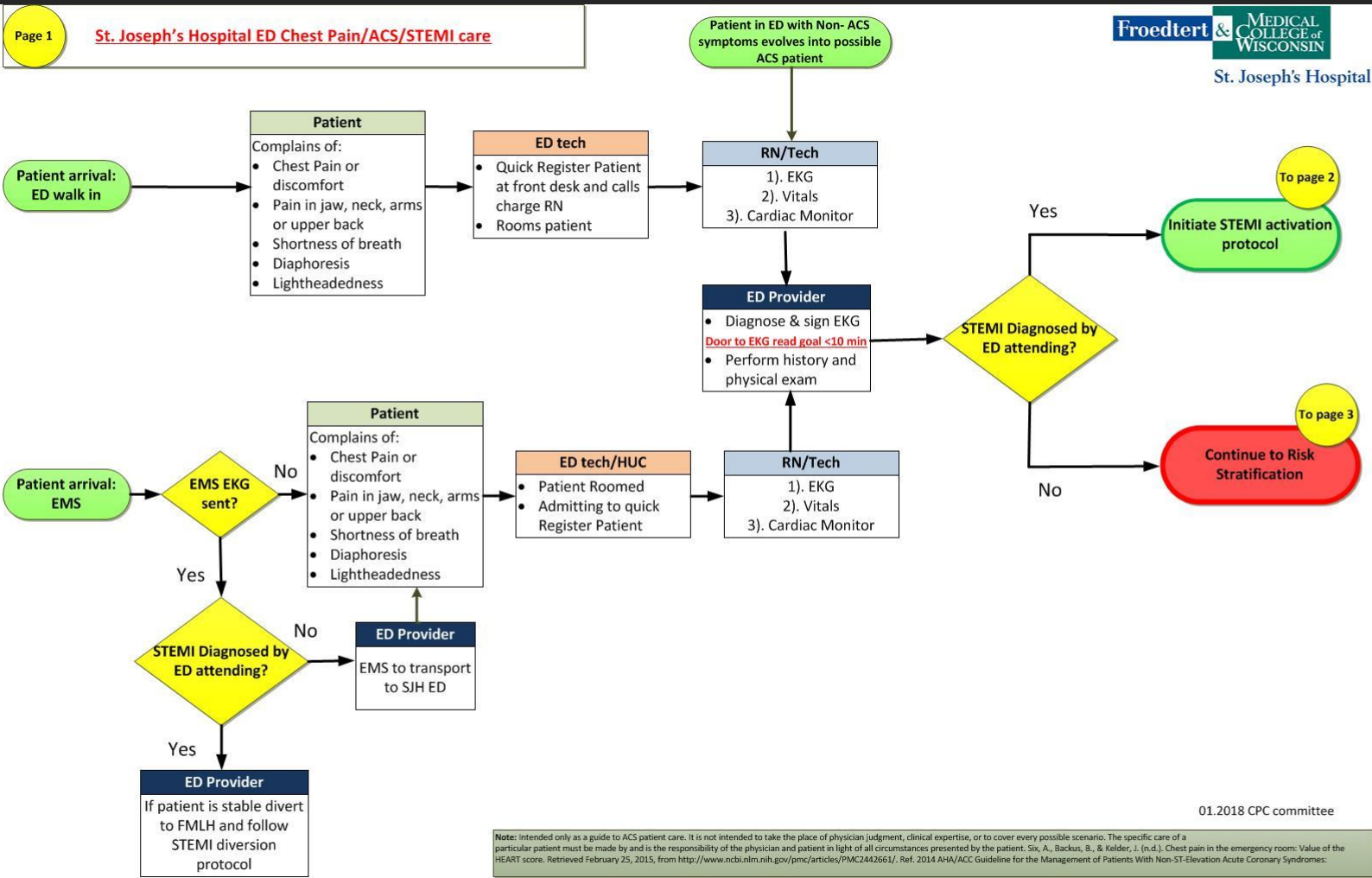
Change in Patient condition

If anytime the status of the Cath Lab availability changes, Cath Lab RN is to notify Access Center RN (414-805-4707). Access Center RN is to then place patient on FH ED board.

If the status of the patient changes and is no longer stable EMS may divert patient to ED. EMS Paramedic base to notify Access center and ED.

FMLH & MCW Cardiology will accept all STEMI referrals

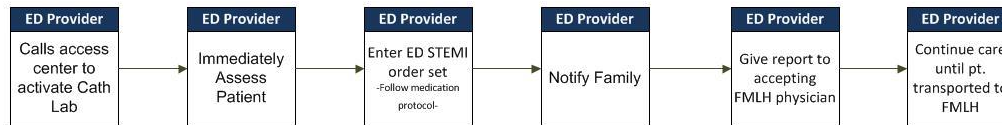
St. Joe's Arrival Procedure



St. Joe's Arrival Procedure

Page 2

ED Provider



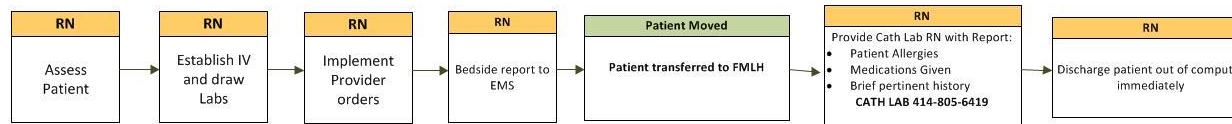
FMLH & MCW Cardiology will accept all STEMI patients

Froedtert & MEDICAL COLLEGE of WISCONSIN
St. Joseph's Hospital

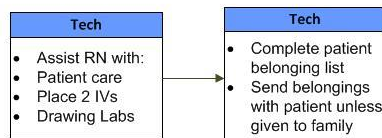
MEDICATION PROTOCOL
ASA- 324 mg
Bilinta (ticagrelor) 180mg
Heparin bolus – 50 units/kg
Nitroglycerin

SIH ED STEMI ROLES

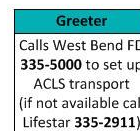
ED RN



ED TECH



ED GREETER



Case Study #1 - Interfacility Transfer

- St. Joseph's Hospital - West Bend on 12/03/2017
- 72 year old male
- Chest pain, left arm numbness, nausea, shortness of breath
- EKG, STEMI activation, heparin, aspirin, brilinta, chest x-ray
- West Bend Fire Department paramedic transfer
- En route to Froedtert in 23 minutes from patient's time of arrival at ED
- Angioplasty with thrombectomy to 100% lesions in proximal and mid LAD
- Discharged home 2 days later

FROEDTERT HOSPITAL STEMI REVIEW

Date: 12/03/2017

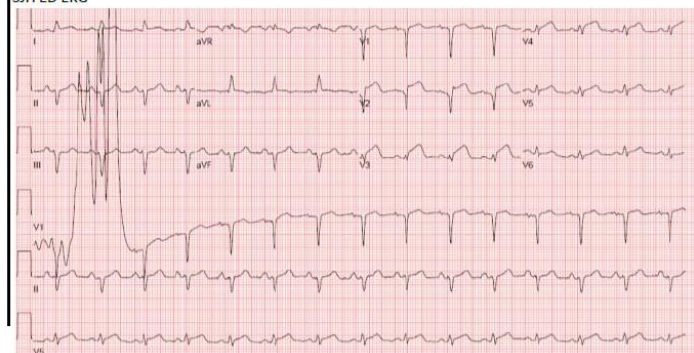
Portal of entry: SJH

72M with chest pain, left arm numb, nausea, SOB

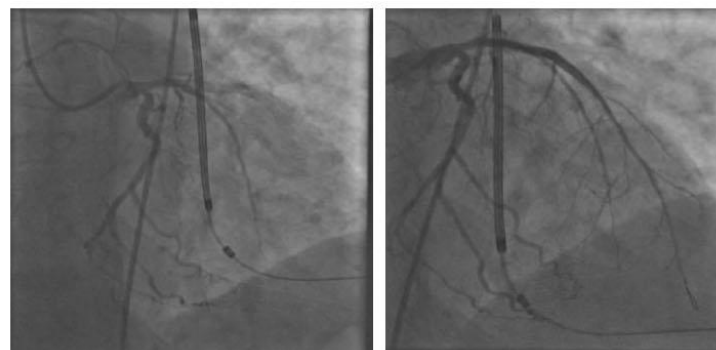
	Patient Arrival to SJH	1st EKG	EKG shown to MD	Cath Team Activated by ED	Transport notified	Cath lab paged received	Pt. en route to Froedtert	RN Cath arrival	Tech Cath arrival	Tech Cath arrival	Invert. Cardiologist Arrival	Patient arrival to Cath lab	Procedure start time	Arterial Access	Vessel Imaged	Vessel open		
TIME	8:16	8:22	8:22	8:26	8:25	8:30	8:39	in house	in house	in house	in house	9:11	9:21	9:23	9:33	9:38		
INTERVALS	First medical contact to ED arrival	Door to EKG	Door-EKG read	EKG read to Cath Team activation	EKG read to transport notified	Activated to page received	Pt arrival to ED to enroute to Froedtert	Paged to arrival time 1st Cath	Paged to arrival time 2nd Cath	Paged to arrival time 3rd Cath	Paged to arrival cardiologist	transport time	Patient arrival to Cath lab to procedure start time	Procedure start time to arterial access	Arterial Access to Angios complete	Angios complete to vessel opened	Pt. arrival to FMLH to reperfusion time	Pt. arrival in SJH ED to reperfusion
Minutes		6	6	4	3	4	23	0	0	0	0	32	10		17		27	82
Goals			10	5		5	30	30	30	30	30		10		15		60	120

EKG

SJH ED EKG



ANGIOGRAMS



SJWB ED

EKG, STEMI activation, heparin, asa, brilinta, CXR

Cath Lab

Angioplasty with thrombectomy to 100% lesions in proximal and mid LAD

Discharge Disposition

DC home 12/05 16:53

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Case Study #2 - Paramedic Intercept

- Kewaskum Fire Department and Boltonville Fire Department (12/09/2016 17:39)
- 53 year old male
- Substernal chest pain rated 10 on a 0 to 10 scale
- Took aspirin prior to arrival of EMS
- KFD - 12 lead (unable to transmit), capped IV, 0.4 mg nitro sublingual
- WBFD (Called at 18:02) - 150 mcg fentanyl
- Contact medical control to bypass St. Joe's
- Additional nitro, additional 50 mcg Fentanyl, 5 mg metoprolol x 2
- 62 minutes from contact to arrival at Froedtert (77 minutes from call)

Case Study #2 - Paramedic Intercept

- Emergency Department Care
 - Zofran, Brilinta, Heparin, Morphine
- Cath Lab Care
 - Drug-eluting stent - 100% lesion in the proximal right coronary artery
 - Mild ST elevation in lateral leads - intervention in the left coronary artery as well
 - Drug-eluting stent- 80% lesion in the proximal circumflex
- Discharged home 3 days later

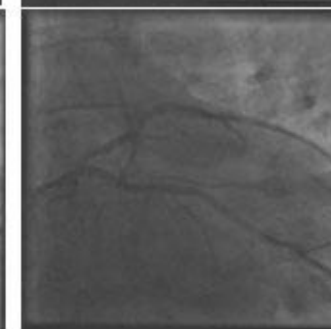
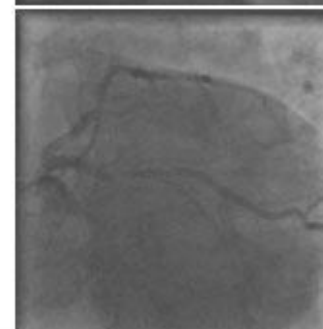
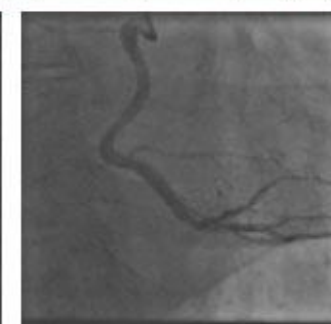
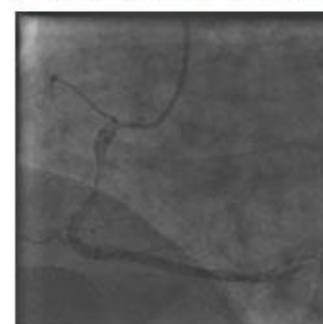
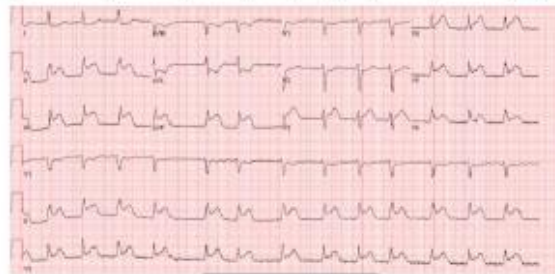
Arrival Date: 12/09/2016

Portal of entry: Kewaskum FD intercept with WBFD
53 yo M CP x 20 minutes

Sex: M

	EMS Dispatch time	EMS # Patient	EMS EKG complete	En Route to FMLH	Cath Lab activated	Page received	Patient Arrival	EKG	EKG read	RN Cath arrival	Tech Cath arrival	Tech Cath arrival	Invert Cardiologist Arrival	Patient arrival to Cath lab	Procedure start time	Arterial Access	Vessel Imaged	Vessel open	Door to Reperfusion time	
TIME	17:39	17:54	18:05	18:09	missing	18:30	18:56	18:59	18:59	18:50	18:51	19:00	19:17	19:23	19:23	19:27	19:32			
INTERVALS		EMS Dispatch to EMS at patient	EMS at patient to EKG complete	First Medical Contact to Departure	EKG to cath lab activation	activation to page received	FMC to arrival at FMLH	Arrival to EKG	Arrival to EKG read	Paged to arrival time 1st Cath	Paged to arrival time 2nd Cath	Paged to arrival time 3rd Cath	Paged to arrival cardiologist	2nd Cath arrival to arrival in cath lab	Patient arrival to Cath lab to procedure start time	Procedure start time to arterial access	Arterial Access to Angios complete	Angios complete to vessel opened	PT arrival in ED to reperfusion	First Medical Contact to Re-perfusion
Minutes		15	11	15	missing	missing	62	3	3	23	20	21	30	18	0	4	5	56	18	
Goals					5	5		10	30	30	30	30	30	15	10	15			90	90

EMS EKG



EMS Care

A.Fib, unable to fax EKG, Bypass SJWB, Nitro x4, Fentanyl, ASA PTA

ED Care

Zofran, Brilinta, Heparin, Morphine

Cath Lab Care

A drug-eluting stent was performed on the 100 % lesion in the proximal RCA. Due to persistent mild ST elevation in lateral leads we decided to proceed with intervention to the LCx as well. A drug-eluting stent was performed on the 80 % lesion in the proximal circumflex.

Discharge Disposition

12/12/2016 15:29 dc to home

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