

Committing HARRISey –
Working Together to Heal a Hole
in the System in Harris County,
Texas

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Objectives

- Overview of the new Limb Salvage Protocols and Program at the Harris Health System

Limb Salvage

- Lower limb disease in diabetics (ulcer, pvd, infection) carries a significant risk of amputation and the disabilities that are associated with it.
- Limb Salvage Programs are multidisciplinary teams/groups of healthcare providers (physicians, wound care specialists, podiatrists, etc.) working together to decrease the effects of lower extremity disease, ultimately by preventing amputations and preserving functional lower extremities. This has been shown to lower costs and improve quality of life.

Harris Health System

- Fully integrated healthcare system that cares for all residents of Harris County, Texas.
- Two acute care hospitals (Ben Taub 441 beds, Level 1 Trauma and Lyndon D. Johnson 271 beds, Level III trauma)
- One Rehab hospital with a Geriatric and PMR unit (49 beds)
- 19 Community Health Centers including the nations first free standing HIV/AIDS treatment center
- 5 same day, 5 school-based and one free standing dental clinic
- One dialysis center
- 10 Homeless Shelter clinics
- Mobile immunization and medical outreach program

Harris Health System

VOLUME STATISTICS - FY2017

- Cases occupying hospital beds - 47,709
- Births - 5,988
- Emergency visits - 165,281
- Outpatient clinic visits - 1,900,096
- Trauma cases - 5,809

Harris Health System

HARRIS HEALTH PATIENT PAYOR MIX

- Uninsured - 60.1%
- Medicaid and CHIP - 20.6%
- Medicare - 9.7%
- Commercial and other funding - 9.5%

Harris Health System

HARRIS HEALTH PATIENT DEMOGRAPHICS

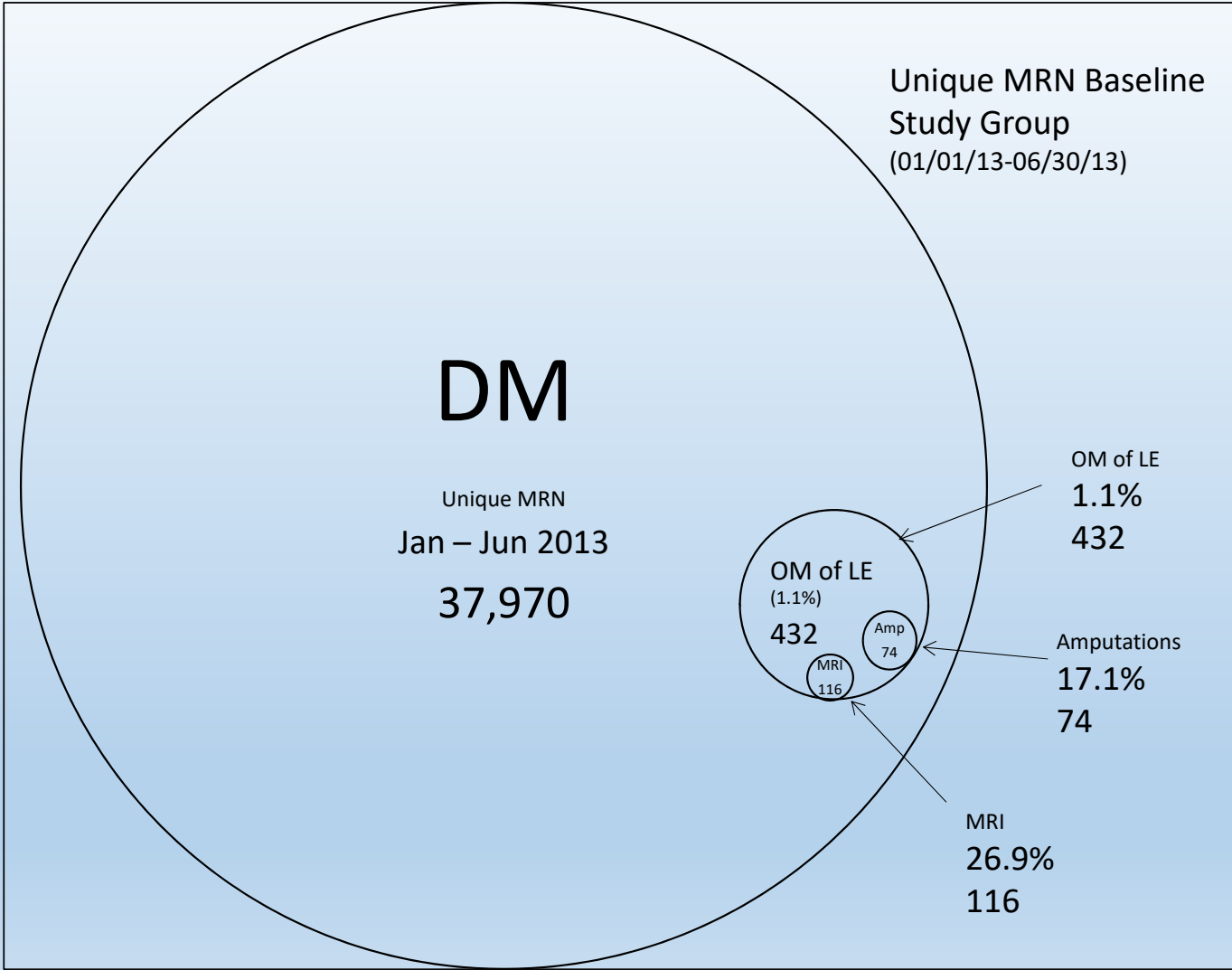
- Hispanic - 59.4%
- African American - 25.1%
- Caucasian - 8.3%
- Asian/Pacific - 4.4%
- Other - 2.6%
- American Indian - 0.2%

Harris Health System

- Two wound care clinics
- Both run by Physical Therapist Wound Care Specialists
- Ben Taub with MD support: from 2000 to present
 - 2000-2014 ½ day per week
 - 2014-2017 ½ day twice per week
 - 2017-present ½ day 4 times per week

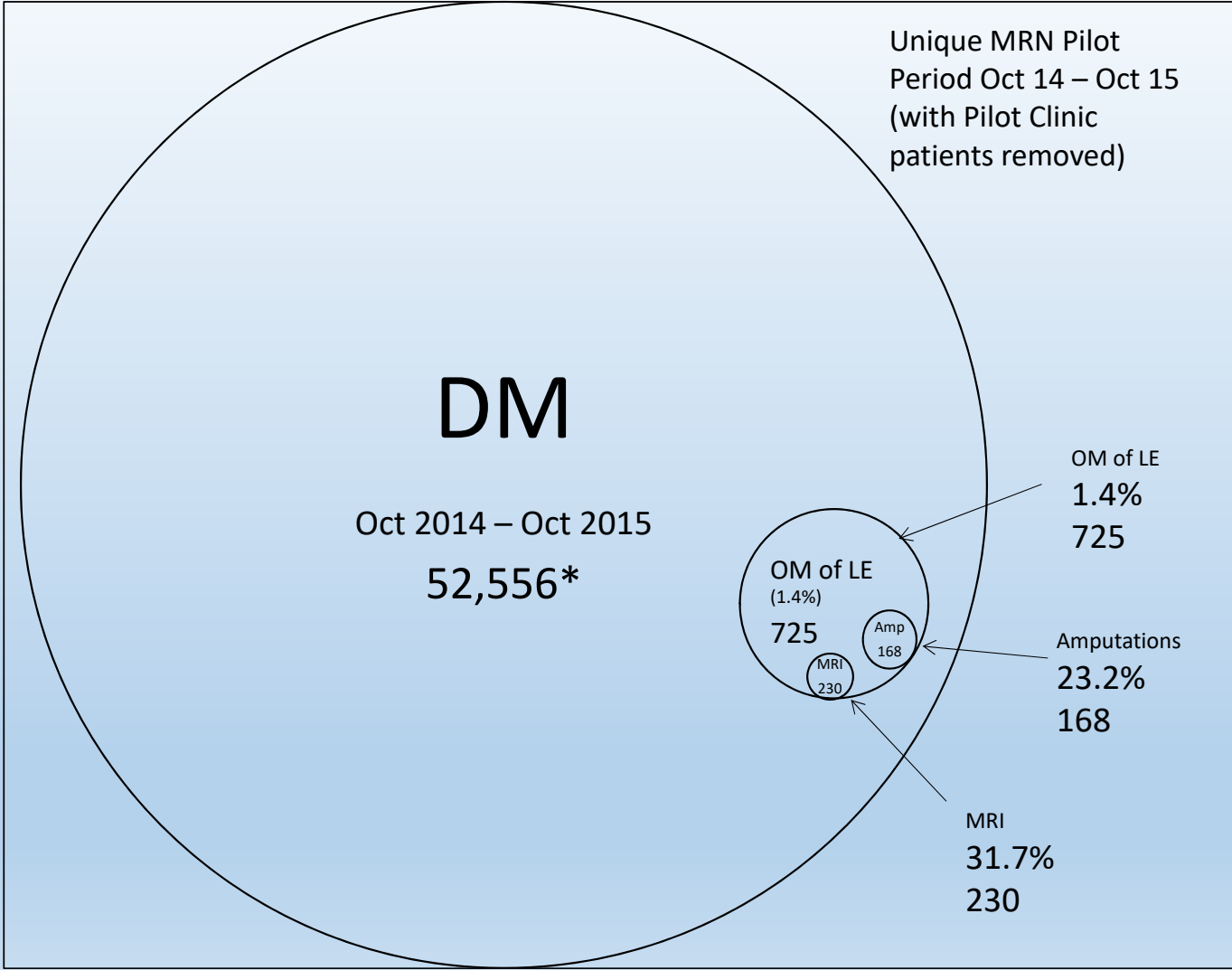
Initial Problem: MRI utilization

- In 2011-12 a Harris Health Task Force was created to look at lowering MRI utilization in diabetic foot wounds with concern for osteomyelitis
- In 2014 an Osteomyelitis Wound Clinic was established at Ben Taub ½ day per week
- Decision to study impact of such a clinic



Clinic Data 10/2014-5/2016

- 64 patients
- 35 patients had MRI prior to visit
- 15 of those (43%) had positive probe to bone (negating the need for MRI)
- 18 additional patients were seen in clinic and had probe to bone and no MRI was ordered
- Total MRI ordered by clinic was 1 of 29 (3.4%) who had not had an MRI
- Total Amputations 5 (7.8%)



* Pilot Clinic patients removed

Summary of Data

Time Period	Total Unique # MRN of DM	Total Unique # MRN of DM/OM	% of DM/OM	# Unique MRN of DM/OM with MRI	% of DM/OM with MRI	# Unique MRN of DM/OM with Amputation	% of DM/OM with Amputation
Baseline (1/1/13-6/30/13)	37,970	432	1.1%	116	26.9%	74	17.1%
Concurrent with Osteomyelitis Clinic (10/14/14-10/27/15) ¹	52,556	725	1.4%	230	31.7%	168	23.2%
Osteomyelitis Clinic (10/28/14-5/17/16)		64		1	1.4%	5	7.8%
¹ Pilot Clinic Patients Removed (58 unique MRN for 50 patients)							

OM: osteomyelitis, DM: Diabetes, MRN: medical record number

Cost Savings

	CPT Based Cost MRI at HHS: \$885	Estimated Cost Amputation 2016 dollars: \$50,000
2013 Baseline Data 432 patients	116 MRI: \$102,660	74 Amp: \$3,700,000
2014-15 Concurrent Data 725 patients	230 MRI: \$203,660	168 Amp: \$8,400,000
2014-16 OM Clinic Data 64 patients	1 MRI: \$885	5 Amp: \$ 250,000
Same 64 patients without OM Clinic (Extrapolation)	19 MRI: \$16,815	13 Amp: \$650,000
Cost Savings for OM Clinic	\$15,930	\$400,000

Study	Vasc Sgy	Pod Sgy	Endo	Outcome
Larsson 1995	Y	Y		78% decrease
Van Gils 1999	Y	Y		83% Limb Salvage 5 yr
Zayed 2009	Y	Y	Y	Decreased Amp rate
Driver 2010	Y	Y		82% decrease
Alvarsson 2012			Y	60% decrease Major Amps. No change minor*
Williams 2012	Y			96% decrease*
Wang 2016		Y	Y	91% decrease Major Amps

Limb Salvage Group Developed 2015

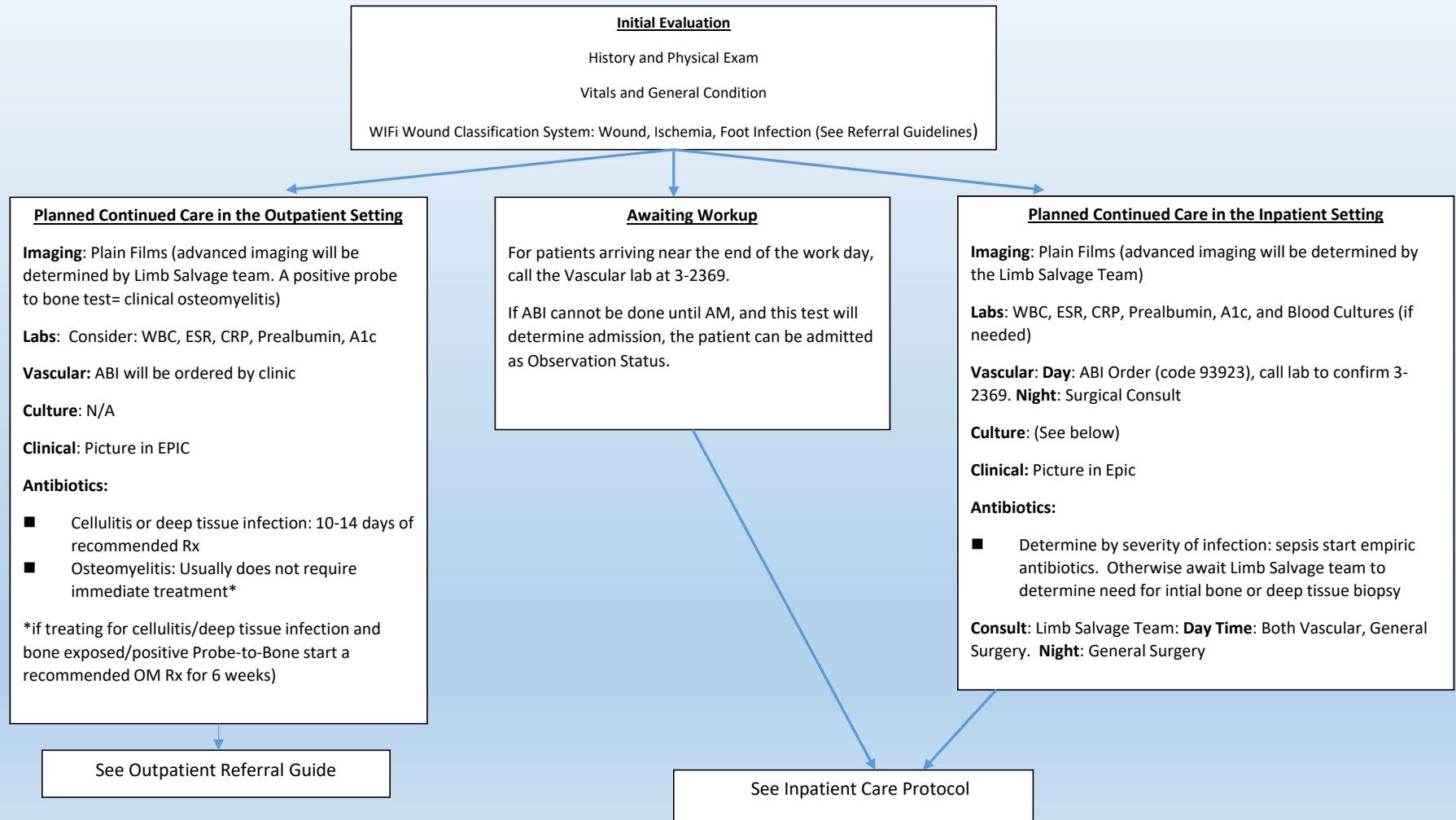
- Physical Therapy Wound Care Clinic (Physical Therapists, Dr. Poythress)
- Vascular Surgery (Dr. Mills, Dr. Gilani)
- Orthopedics (Dr. Perkins)
- Infectious Disease (Dr. Dang, Dr. Greenberg)
- General Surgery (Dr. Todd, Dr. Mattox)
- Emergency Medicine (Dr. Andrabi, Dr. Richina)
- Internal Medicine (Dr. Hyman)

Limb Salvage Group Developed 2015

- Determined to expand the approach to Limb Salvage
- Incorporate all aspects of the Harris Health System
- Implement WiFi as the standard assessment instrument
- Goals:
 - Develop Protocols for Limb Salvage for Ben Taub Hospital and Feeder Clinics
 - Develop educational program for clinicians
 - Expand resources available to Harris Health patients

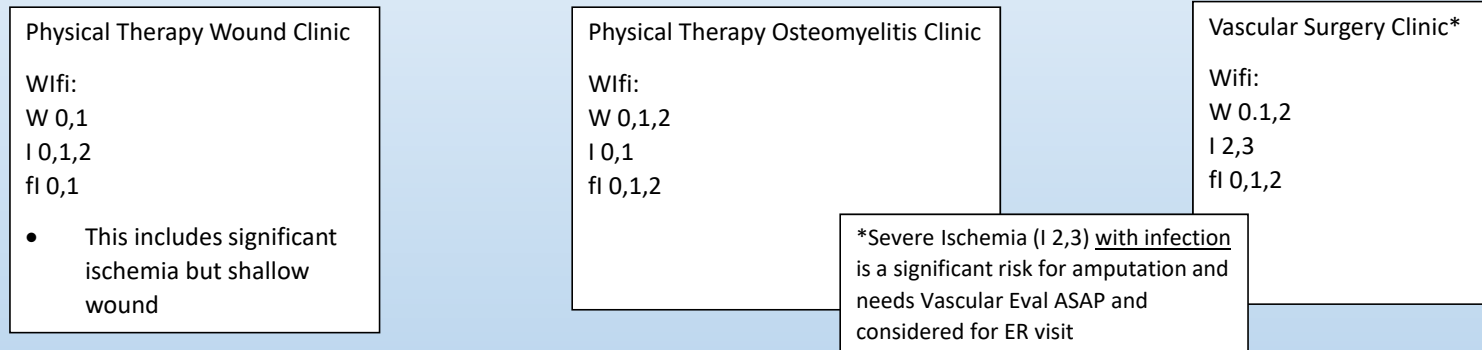
Outpatient and Emergency Center Algorithm for the Non-traumatic Foot Wound/Ulcer

Includes: Neuropathic (e.g. diabetes), Peripheral Arterial Disease, Non-healing ulcer of Lower Limb > 2 weeks of duration and Gangrene



Outpatient Referral Guide for Limb Salvage

- Use the suggested Wifl categories and individual patient clinical situation
- In the Emergency Center, consult Limb Salvage Team as needed for guidance
- Refer to Podiatry for onychomycosis and nail care from clinic/inpatient.

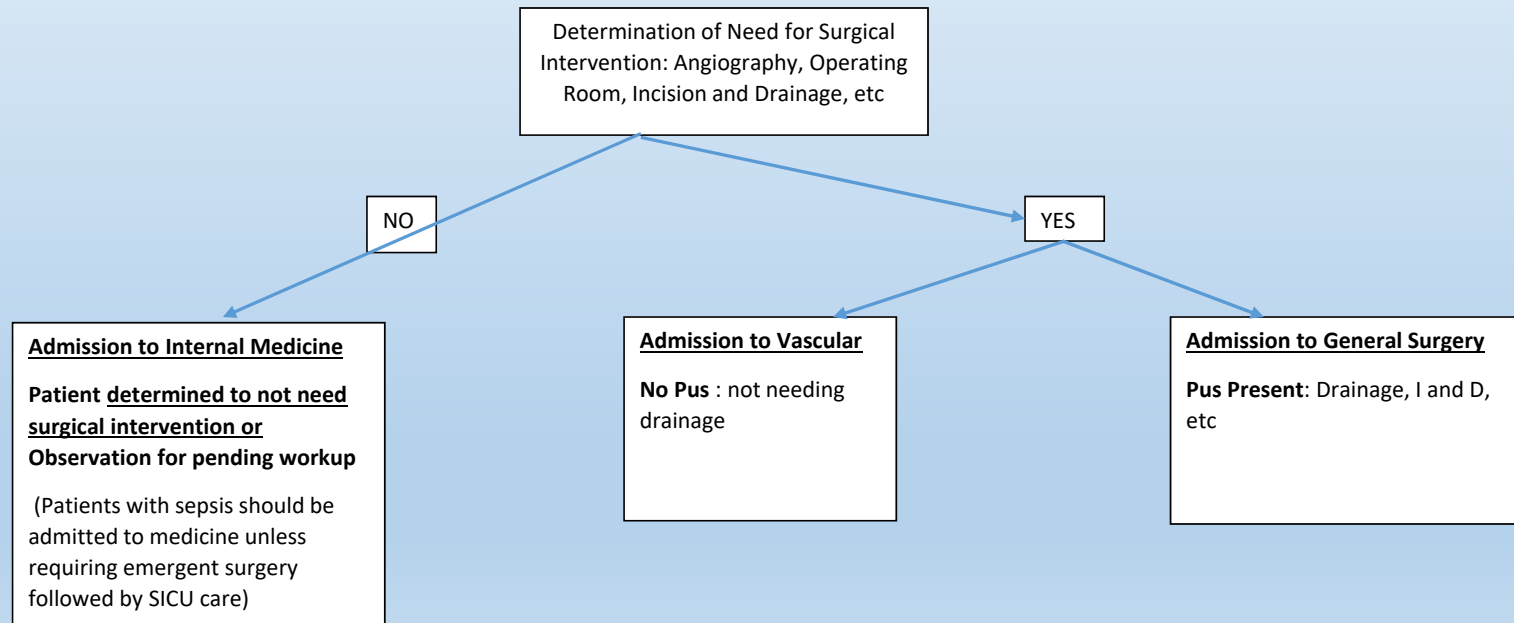


*Patients referred to the Osteomyelitis Clinic should have a radiographic diagnosis or positive probe to bone test diagnosis of Osteomyelitis. No referral to ID Clinic needed as they are in constant contact with Osteomyelitis Clinic via Epic mail.

** See the OUTPATIENT AND EMERGENCY CENTER ALGORITHM for details on pre-clinic tests to order, antibiotics, etc.

Tertiary Care Inpatient Care Planning for the Limb Salvage Team

1. Consult the Limb Salvage Team (requires paging General Surgery Consult and Vascular Surgery Consult. **Overnight** General Surgery Resident covers both General Surgery and Vascular Surgery Consults)
 2. Based on Joint Evaluation (except overnight), one member of the Team will write the consult and/or admission note.
- Outcomes include :
- o Recommend for outpatient f/u based on the Outpatient Referral Guide
 - o Admission to General Medicine for non-surgical infection or pending ABI, work-up
 - o Admission to Vascular Surgery based on Ischemia and Infection
 - o Admission to General Surgery based on wound, ischemia and infection not amenable to vascular intervention



Recent Additions and Plans*

- Added medical students, IM residents, and ID fellows
- Vascular Surgery Resident research
- Radiology Resident Research
- Moved the Vascular Lab
- Adding Podiatrists
- Adding Angio Suite
- Adding Difficult Case Clinic