VA U.S. Department of Veterans Affairs

Banner
University Medical Center
Phoenix

University of Arizona
College of Medicine Phoenix
Internal Medicine Residency Program

HOUSESTAFF REFERENCE POCKET BOOK

Fifthteen Edition

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UACOM-P Internal Medicine Website:

www.uaphxim.com || Password: uaphxim

St. George and the Dragon (Raphael 1904-1906)

VA Numbers

VA Common Phone Numbers			
Main Line: 602-277-5551			
Code/Rapid	**222**	Echo Reading	4480
Attending Pager	779-1013	Nuc Med/Stress	7639/4740
2A HUC/Nurses	1026/1004/1007	Radiology	5068
2C HUC/Nurses	7602/7603/3836	MRI	5014/5789
3B HUC/Nurses	7687/7688	X-Ray	6154
4B HUC/Nurses	6079/5436	PET	6967
4C HUC/Nurses	7488/7489/7310	US	7716
4D HUC/Nurses	7483/7484/3347	ECHO Lab	7069/7374
4E HUC	6701/6956	Vascular Lab	5857/7965
5C HUC	7438	CT	6046/7583
5D HUC	7434	IR	7016
ICU HUC	7448	Lab/Phlebotomy	7520/7535
ICU Doc Room	7059/7395/2536	Heme/Add Ons	7622/7698
Night Float/Chiefs	6404/5200	Blood Bank	7911
Blue Team	6133/6134/6127	Chem/Add Ons	7621/7900
Green Team	6929/7295/7504	Micro	7623
White Team	7039	Pathology	7898
Orange Team	5535/7075	Histology	7898/5525
Red Team	7351/7212/7216	Send Outs	5525
Resp Therapy	7263	Tele Monitors	7697
ED	7158	Inpt Pharm	7746
HD	7261/7157	Outpt Pharm	7774
Infec Control	7322/2344	PACU	7497
Vocera	1481	Cath Lab	5861
Transfer Coor	3825/6049/2621	Bed Czar	5122
Occ Health	7317/7866	Nurse Sup	7567, (602) 568-6069
CLC	7260	Nocturnist	5803/7308
Surg Work Room	2057	Call Rooms	1952

VA Consult Services

Tools -> Telephone Directory -> On Call Schedule -> double click date
VA ICU on Call Provider: Amion -> Vaicupulmonary

VA Discharge

New PCP -> PHX-GENMEDPHYSFASTTRACK

Team Room Door Codes			
Blue Team	7651	Orange Team	1933
Red Team	1933	White Team	2435
Green Team	1933	4th Floor Classroom	7333
Night Float	6587	Chief Room/ICU	1933/1120*

BUMCP Numbers

Common Numbers

BUMG Teach Attending	201-0829	IM Chief Sick Phone	818-2129
BUMG Res Call	201-1236	ICU Call Pgr	201-2201
Cross Cover A	201-1677	ICU Admit (BUI)	201-4442
Cross Cover B	201-1868	Debra McIntosh	839-3644
IMC/Resident Clinic IMC Fax	839-3927 839-4233	Fam Med Clc Backln	839-4567
IMC Backline	255-7770	OtPt Ban Pharm	839-2300
Clinic Chief	839-6304	Ban Family Pharm	839-2577
Chief Office - Med Ed	839-5024	OtPt Infusion Center	839-3963

	A	B	C	D
1	2071	2124	3212	3217
2	3184	2004	6707	2048
3	2041	3245	2700	2694
4	3181	2105	2079	3264
5	2174	2052	2065	3395
6	2127	3287	2118	3295
7	2016	3301	2039	3306
8	2404	2405	2008	2063
9	2030	4704	2069	3337
10	5840	3342	6086	3345
11	2073	2050	3362	3368
12	3960	3959	2076	3377

Obs 8888 **Security** 747-4400 **PACU** 2153 **ED**: 8278/2222 **ICU equipment room** 9865*
Chaplain: 480-670-6996 **IT Help** 747-7828 **Call Room Code (5, 12, 14):** 1928*

CODE	6666	EKG STAT	201-1601
Main Lab	3443	TELE Monitors	3521
Blood Bank	3397	Rad Reading	4850
Chemistry	3476	Medical Imaging	4633/4619
Micro	3481	CT Scan	4652/8648
Pathology	4580	MRI	4315/8695
Diet/Nutrition	4430/4431	US	4000
Endoscopy	4660	Echo	4520
Respiratory	4574	IR	3574/4633
Occ Health	4456	Cath Lab	4687
IV Pharmacy	4557	Stress Tests	5259
Pharmacy	4555 op3	Nuc Stress	2185
STAT Pharmacy	3322	Nuc Med	2370/4747
Supply Chain	4470	Med Records	3519
VOCERA	4350	Trauma	5001
EVS	4415	Send-out lab	3625
Transport	8595	HD	8700
Para Clinic	6332	Lines Team	Vocera “PICC1”
Pet Therapy	4380		

***Full List on Banner Intranet → About BUMCP (left column) → Phone Numbers**

BUMCP Numbers

Tower 1 Numbers

4	Surgical ICU	839-8850
5	Medical ICU	839-8950
6	Neuro ICU	839-9050
7	Cardiovascular ICU	839-9150
8	Neuro ICU	839-8050
9	Behavioral	839-9650
10	Surgical PCU	839-9250
11	Surgical PCU	839-9350
12	Medical PCU	839-9450
14	Medical PCU	839-9550
15	Neuro PCU	839-9750
16	EMU/Neuro PCU	839-9850
17	Transplant PCU	839-9950

Internal Medicine Admit

Banner University Medical Group Teach "BUMG Teach"

IM Resident Admit Pager: 602-201-1236 Resident Amion: uacompim all

Banner University Medical Group Direct Care "Wheel"

Hospitalist Distribution/IM Patient Assignment: 602-839-6260

Family Medicine

Admit pager: 602-201-8388

Central Distribution/Banner Transfer Services

602-839-4444 ext. 2

*Ensure admission/transfer comes through central distribution. Use the registration correction order to change patient's attending and/or PCP.

ICU Admit

Banner University Intensivists (BUI)

Attending Admit Pager: 602-201-4442

Page and discuss case with fellow, they will distribute upon accepting the patient

Banner University CVICU

Attending Pager: 602-541-5372
Cardiogenic Shock Team: 602-541-5372

Page for CVICU attending or consultation for cardiogenic shock

Banner University SICU

Pager: 602-201-6038

Banner University Neuro Critical Care

Attending: 480-698-4911	NP: 480-698-5032

Cardiology

***Attempt to call patient's primary cardiologist first, otherwise call on-call cardiology service**

Banner University Cardiology Service

University Cardiology Service	New consult:(480) 532-8210 Page fellow on amion → uacompcards
Electrophysiology (EP)	602-531-2708
Interventional Fellow (IC)	Text page fellow on amion → uacompcards
STEMI Pager	602-201-1809
Structural Heart Disease (SC)	Text page fellow on amion → uacompcards
Advanced Heart Failure	Team A (New Consults/ICU-level Established/Weekends/Nights): 480-528-1750 or text page
	Team B (Established PCU/Floor M-F 8AM-5PM): (480) 271 -4761
	Gopalan, Radha: 856-904-3987
Cardiology Procedure Scheduler	602-839-2780 (call for TEE scheduling)

Neupane, Saroj (IC)	Eng, Marvin (IC)	Chiang, Ann (IC)
Katrapati, Parneeth (EP)	Su, Wilbur (EP)	Tung, Rod (EP)
Weiss, Peter (EP)	Zawaneh, Mike (EP)	Yeneneh, Beeletsega (Gen)
Gopalan, Radha (HF)	Andrade, Ambar (HF)	Mahar, Jamal (HF)
Gideon, Philip (Gen)	Beydoun, Hassan (Gen)	Rubin, Gabrielle (HF)

Biltmore Cardiology

Office: 602-952-0002	Fax: 602-224-9119
Alkhatib, Basil(IC):516-359-7284	Bahu, Marwin(EP):602 790 2922
Cherukuri, Gopi(IC):602-448 -4840	Morgan, Michael(IC): 602 828 3777
Maki, Peter (IC):	Varma, Diyva (EP):
Ibrahim, Akram(SC):	

Heart & Vascular Center of Arizona

Office: 602-307-0070		Fax: 602-307-0080
Reichert, Byron (EP)	Klein, Jason	Laufer, Nathan
Evans, Ed	Brodsky, Adam	Singh, Parminder

Affiliated Cardiology

Office: 602-277-6181 (option 0)	Fax: 602-263-9528
Akkad, Aher	Askari, Ali
Bashir, Faran: 623-643-9113	Rassadi, Siamak

Pulmonology

Banner Academic Pulmonary Services		
Page fellow on amion → uacomppulm (For VA: amion -> Vaicupulmonary	Alternate: 602-201-1022	
Alalawi, Raed (IP)	Jarnagin, Lisa (IP)	Iusim, Stephanie (ILD)
Sista, Ramachandra (Transplant, pHTN)		

Arizona Center for Chest Diseases/Banner University Lung Institute		
602-264-5685 (option 3)		
Dick, Cameron	Hornenko, Grig	Santhana, Sunil

Cystic Fibrosis Pulmonary Clinic at PCH	
New Consult: Mon-Fri 8am-5pm: 602-933-0985	After Hours: 602-933-1000
Katie Whitley, RN 602-933-0316	- ask operator to page MD on call
Gong, Gerald	Liao, Da-Wei

Gastroenterology

Banner University Medical Center Gastroenterology	
New Consults: 602-201-2813	Follow up: call/text page GI fellow
Fellow schedule on amion → uacompgi	

Banner Advanced Endoscopy Service (ALL NEW CONSULTS)	
On-Call Daily; Pager #: 602-201-1904	Addy (NP) – 602-812-0514
Liu, Kevin - 623-363-9052	Nawaz, Mustafa – 630-542-0417

Interventional Endoscopy Associates (F/U only)			
Office Number: 623-300-9011			
Mounzer, Rawad	Cell: 203-589-5229	Pitea, Teodor	Cell: 623-302-3054

Hepatology

New Consult: 602-201-4294		Office: 602-521-5800	
Back Line: 602-839-6070		*Text page to reach On Call Physician	
Nathan, Rohit	Nevah, Ilan	Wong, Mark	Fallon, Mike
Han, Ma Ai Thanda	Wijarnpreecha, Karn		

Allergy/Immunology

Arizona Allergy Associates	
New Consult: 602-266-4114	Wong, Duane
Rishi, Rahul	Reeder, David

OB/GYN

Banner University Academic OB/GYN	
New Consult: 602-201-5363	Postpartum Pager: 602-201-3018
OB Triage: 602-839-6700	OB Hospitalist: 480-714-4651
Maternal Fetal Medicine Hospitalist	
New Consult: 602-201-7009	
Minimally Invasive Gynecology	
New Consult: 602-521-5700 or 480-303-1919	
Gynecology Oncology	
New Consult: 602-201-0039	
Arizona Oncology (GYN/ONC)	
Office: 602-253-5300	
Borst, Matthew 602-799-2269	Bhoola, Snehal 480-239-3100

Dermatology

Medical Dermatology Specialists			
Office: 602-354-5770 (option 9)			
Ackerman, Lindsay	Kessler, Margaret	Baltazar, David	Harview, Christina
If called from outreach, Dr. Ackerman's and Kessler's pts should be placed on a Academic Medicine Teach teams			

Infectious Disease

Banner University Medicine Infectious Disease	
For general ID consults call/text: 480-724-9035	Askar, Wajih (414-306-0398)
If consult is regarding:	Carpenter, Kent (602-510-2681)
-Transplant (pre/post) contact Dr. Askar	Gomez, Gerardo (312-465-6026)
-MICU contact Dr. Carpenter	Marschall, Jonas (314-818-4267)
-Orange Medicine contact Dr. Shi	Nicalasora, Nelson (419-902-9054)
*if unavailable, contact number above	Shi, Aishan (480-406-5580)

Phoenix Infectious Disease Consultants		
Office: 602-254-1136 (option 0)		
Gaidici, Adriana	Clarke, Dwight	Obiesie, Ndidiamaka

Arizona Infectious Disease		
New Consults: 480-582-3700		
Seroy, Justin	Dalal, Aman	

Interventional Radiology

On-call Pager: 602-252-0096			
Chen, Steve	Hirsch, Kevin	Mendenhall, Steve	Goettl, Christopher

Nephrology

***Attempt to call patient's primary Nephrologist before contacting on-call provider**

Arizona Kidney Disease & Hypertension Center (AKDHC)	
Office: 602-263-5446 (option 1)	Fax: 602-263-7722
Dahl, Katharine	Patel, Nilesh
Zaharia, Valentin	Qureshi, Junaid
Laurel, Edgardo	Neyra, Roxana
Atalla, Jamal	Bueno, Damasco
Nimri, Alexander	Channis, Basel

Southwest Kidney (SKI)	
Office: 480-610-6100	Fax: 480-393-0285
Bhalla, Sarabjit	Hyde, Ronald
Chaparala, Himabindu	Laiserin, Jeffery
Chong, Yun	Poduval, Rajiv
Cooper, Randy	Schinker, Stephen
Go, Melissa	Pervez, Aslan
Khurana, Amandeep	Waheed, Umar

Desert Kidney Associates	
Office: 480-834-9039	
Kolar, Prashant	Kottalgi, Manjunath

Endocrinology

Banner University Medicine Diabetes and Endocrinology Institute			
New Consult: 602-201-7629		On Call Pager: 602-201-7629	
Nasr, Christian	Sheth, Grishma	Panjawatanan, Panadeekarn	Schriber, Alkesandra
Patients should follow up in endo clinic with physician who performed initial consultation			

Hematology/Oncology

Banner MD Anderson	
Office: 602-521-3700 (option 2)	
Bi, Sucai	Paul, David
Lacy, Curtis	Erickson, Todd
Tulpule, Sunil	

Palliative Care

Banner University Medicine Palliative Care	
New Consult: 602-839-5843	On-Call Pager: 602-201-6523
Gardner, Brandon	Anwar, Liza

Neurology

General and Stroke Neurology		
General Neurology Pager: 602-201-4114 Stroke Neurology Pager: 602-201-0068	Amion: Neuro602!	
Tobin, Joshua	Alexandrov, Andrei	Yancy, Holly
Crain, Ian	Murthy, Ganesh	Wang, Alan

Toxicology/Addiction

Banner University Medicine Toxicology			
New Consults/Poison Control: 602-253-3334		On Call: 602-839-3949	
Spyres, Meghan	Kang, A Min	Brooks, Daniel	Canning, J
Ruha, Michelle	Heise, Craig	Graeme, Kim	Snow, Jerry

Psychiatry/Psychology

Banner University Medicine Behavioral Health
New Consult/Follow-up: 602-839-6855 (leave VM with detailed info)
Inpatient Psychology
General (Dr. Joumas) New Consult/Follow-up: 602-521-3620
Oncology (Dr. Marcus) New Consult/Follow-up: 602-521-3700

Bioethics

Banner University Medicine Bioethics
New Consult: 602-839-8688
After Hours 4pm-8am/Weekends: 602-839-2000

Physical Medicine and Rehabilitation

Banner Acute Rehab	
Mon-Fri 8am-5pm: 602-839-2737	After Hours/Weekends: 480-433-6817
Geimer, Paul: 602-254-6515	Dr. Agarwal mobile: 646-696-0650
Banner Select Acute Rehab: 480-581-3850	

Rheumatology

Banner – University Medicine Rheumatology Clinic	
New Consult: 602-521-3000	
Smith, Trent	Keshavamurthy, Chandana

Surgery

*For up to date schedule refer to Banner Intranet → **Central Logic**

General and Trauma Surgery (TESS)

New consults/Attending: 602-695-5625	Trauma Resident: 602-201-6033
Follow-up: text page resident on call	

Anesthesia

Trauma Anesthia: 480-392-2976	Nerve Block Team: 480-349-4007

Vascular Surgery

Vascular Surgery Specialists

New Consult/Follow-up: 602-277-7430

Brink, Jeromy	Seigrist, Brett	Zomaya, Martin

Dr. Winston Thomas Private Group

New Consult: 602-266-1556

Orthopedic/Hand Surgery

New Consult/Follow-up (ortho resident): 602-201-0427

For Hand if unable to reach Ortho: 602-258-4788

Oral and Maxillofacial Surgeons

New Consult (Resident) via Central Logic

Follow-up: 602-201-3071 or text page resident

Plastic Surgery

Forma Plastic Surgery

New Consult: 480-303-1515

Sabeeh, Vas	Walsh, Molly	Yao, David

Urology

Arizona Urology Specialists

New Consult: 602-222-1900	Alternate: 877-595-2111

Feng, Adrian	Kletscher, Bruce	Daley, Shane	Kalinowski, Scott

Transplant/Hepato-Biliary Surgery

Arizona Transplant Associates

New Consults: 602-252-2543	Resident: 602-201-4763

Fabrega, Alfredo: 602-253-2262 *Call for established patients

Brink, Jeffrey	Cashman, Jeffrey	Van der Werf, William	Chaly, Thomas

Cardiothoracic Surgery

Phoenix Cardiac Surgery

New Consult: 602-253-9168

Amabile, Orazio	Fang, Kenith	Tasset, Mark	Colon, Modesto

Surgery

Colo-Rectal Surgery	
BUMG Colorectal	
New Consult: 602-521-5100 (Option 4) or Central Logic	
Affiliated Colon and Rectal Surgeons	
New Consult: 602-252-7004 (option 0)	
???	

Endocrine Surgery
Look on Central Logic

Bariatric	
New Consult: 602-521-3050 (option 4)	
Landin, Mackenzie	Lovato, Christine

Otolaryngology			
New Consult: 480-303-1363			
Williams, William	Go, James	Wilkey, David	Ho, Steven
Knowland, Michael	Shipp, Gordon		

Neurosurgery			
BUMG Neurosurgery (NEW CONSULTS)			
New Consult: 480-303-1478 or Central Logic			
AZ Neurosurgery and Spine Specialists			
Office: 602-254-3151 (option 1)		Moon, Karam	Wilson, David
Iannotti, Christopher	Mendenez, Jose	Kumar, Vikram	Willis, Byron

Podiatry	
Wound Care Podiatrist Below the Knee: 480-303-1664	
Wilde, Troy	Cell: 972-951-9691
Abraham, Susan	602-251-3113

Opthalmology

Ophthalmology		
American Vision Partners		
New Consult/Follow-up: 602-977-6100	Walman, Gerald	Sangave, Amit

Wound

Wound & Ostomy Care	
New Consult: 480-303-1664	Office: 602-839-3310
Dhillon, Vinnie: 623-262-0930	Majeed, Bashar: 602-318-9457
Wound Nurse: 602-839-6250	Wilkensen, Natalie (NP) 623-313-3983
*Call list can be found through intraweb on call calendar -> inpatient wound nurses	

Banner Outpatient Numbers

Institute / Clinic	Main Phone	Main Fax
Outpatient Therapy	602-521-3060	602-521-3066
Orthopedic	602-521-3250	
Orthopedic – Sports Medicine	602-462-0263	
PM&R	602-521-3300	602-521-3246
Neurosciences	602-521-3300	602-521-3246
Lung	602-521-3400	602-521-3663
Heart	602-521-3090	602-521-3661

Institute / Clinic	Main Phone	Main Fax
Transplant	602-521-4664 (Opt 1)	602-521-5779
Digestive	602-521-4664 (Opt 2)	602-521-5179
Ortho/Spine	602-521-4664 (Opt 3)	
Surgery Elective	602-521-5969	602-521-5987
Surgery Trauma	602-521-5968	602-521-5988
Surgery Endocrine	602-521-5969	602-521-5987
Bariatric Surgery	602-521-3050	602-521-3046
Endocrinology	602-521-5200	602-521-5201
OMFS	602-521-5150	602-521-5151
Women's Services	602-521-5700	602-521-5701
Urology	602-521-5770	602-521-5771

Institute / Clinic	Main Phone	Main Fax
Internal Medicine	602-839-3927	602-839-4233
Family Medicine	602-839-4567	602-839-2232
Toxicology	602-839-6690	602-839-4138
Behavioral Health	602-839-4796	602-839-6988
Rheumatology	602-521-3000	602-521-3096
Infectious Disease	602-839-3350	602-839-6827
Concussion Center / Sports Medicine	602-839-7285	602-839-7272

Cardiology

Heart Score for Chest Pain

History	Highly suspicious	2
	Moderately	1
	Slightly	0
ECG	Significant ST depressions	2
	Non-specific ST changes	1
	normal	0
Age	>65 year	2
	45-65 year	1
	<45 year	0
Risk Factors (HTN, HLD, Premature CAD, DM, Tobacco Use, BMI >30)	>3 risk factors	2
	1-2 risk factors	1
	O risk factors	0
Troponin	2x ULN	2
	1-2x ULN	1
	Normal	0

Score	Risk
0-3	Low
4-6	Moderate
7-10	High

CHA_2DS_2-VASc

Age : (<65, 65-74, >75)	0, +1, +2
Gender (M, F)	0, +1
CHF Hx	+1
HTN	+1
CVA/TIA/VTE Hx	+1
Prior MI, PAD or Aortic Disease	+1
DM Hx	+1
Total Score 0	ASA
1	ASA or AC
>2	AC

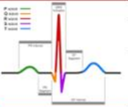
Rate

# of QRS'x6

Rhythm

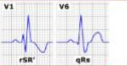
1) Regular vs irregular 2) Sinus vs non-sinus 3) Blocks

Intervals



PR = 140-200	
QRS = 100-120	
QT = M <440, W <460	

RBBB



LBBB

Axis

Ischemia/Infarction

1) T wave 2) ST Depression 3) ST Elevation 4) Q wave

Cardiology

TIMI Score

Criteria	Points
Age ≥ 65	1
Aspirin use in past 7 days	1
At least 2 episodes of angina in 24h	1
ST changes 0.5mm	1
Elevated Cardiac biomarkers	1
Known CAD (>50% stenosis)	1
3+ risk factors: - HTN >140/90 or on med - HDL <40 - Premature CAD in male relative <55 or female <65 - Current Smoker - Diabetic	1

Score	% 14-day coronary event risk	Recommended Action
0-1	4.7	Conservative Management
2	8.3	
3	13.2	Stress Test
4	19.9	
5	26.2	Coronary Cath
6-7	40.9	

High Sensitivity Troponin (hs-TnT) Evaluation

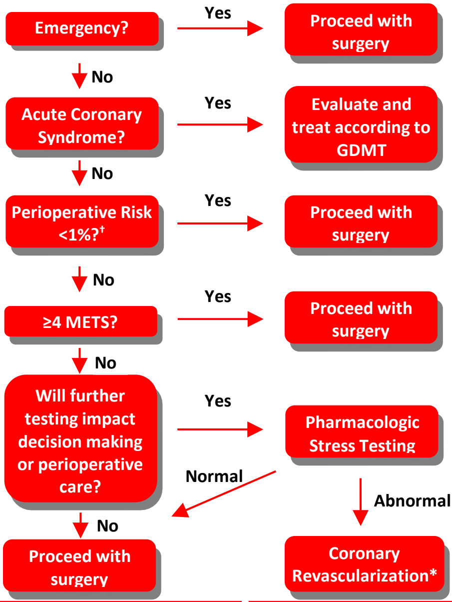
Trend Q3-5H, Q1H if high risk/concerned	Delta≥5 is significant	Baseline (99th percentile) ↑ in CKD and LVH
cTnT → hsTnT ~x1000	Peaks in 12-48 hrs	Normalizes in 5-14 days

ACS Treatment

ASA 325mg chewed/rectal	Atorvastatin 80mg Rosuvastatin 40mg	Heparin gtt (ACS protocol)
+/- Nitroglycerin C/I: ↓BP or RCA MI	Beta Blocker Before D/C	*Clopidogrel 300-600mg Ticagrelor 180mg Prasugrel 60mg
ACE/ARB Before D/C	Coronary Revascularization	* Discuss P2Y12 with cardiology if possible

Cardiology

Preoperative Risk Stratification



ECG:
- If known ASCVD, arrhythmia or structural heart disease. (IIa)
- If unknown status and >low risk surgery. (IIb)

TTE:
- If suspected ≥ moderate valvular disease and no echo in 1 year or significant change in symptoms. (Ic)

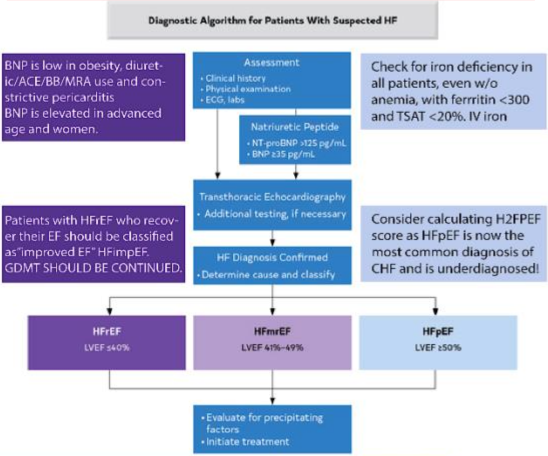
†Perioperative Risk Calculators:
NSQIP, and/or RCRI

*Time Necessary to Delay Surgery Post-Cardiac Procedure:
- Angioplasty → 14 days on DAPT
- Bare Metal Stent → 30 days on DAPT
- Drug-Eluting Stent → 1 year on DAPT

All patients should be evaluated for heart failure, valvular abnormalities and arrhythmias and managed according to guidelines prior to surgery.

Cardiology

Inpatient Heart Failure



Common Triggers		
ACS	HTN	Afib
Endocarditis	Infection	Diet
Anemia	Thyroid	NSAIDs
Non-Dihydropyridine CCB		

		Congestion		Congestion Markers
		Dry	Wet	PCWP >15
Perfusion	Warm	Stable	Diurese	Sensitive: ↑JVP, orthopnea, bendopnea, + square wave test
	Cold	Inotrope (ICU)	Diurese/ Inotrope (ICU)	
Perfusion Markers	CI <2.2	Sensitive: None	Specific: ↓PP/SBP, cool extremities, poor response to treatment	
If >2 admissions per year/difficulty with treatment --> AHF referral				

Inpatient Treaments of Decompensated Heart Failure

Diuretics	ACE/ARB/ARNI	ββ	MRA	SGLT2i	Hydral/Indur	CRT	ICD	Discharge
2-2.5x home dose Furosemide/ Torsemide/ Bumetanide IV BID-TID	ARNI should be 1st choice	Do not hold unless hypotensive	C/I if Creatinine >2.5 or K >5.0	Consider continuing during hospitalization	Adjunct in self reported AA patients on optimal GDMT and NYHA III-IV	If LVEF <35%, LBBB and QRS >150msec	Only after 3 months of GDMT, 40 days post-MI, LVEF <35% and >1 year survival	F/U within 1 week with cardiology
If UOP <150cc/hr or Una <50-70, at 2 hours --> double dose and consider thiazide	Consider valsartan for simplified transition to ARNI	Start once euvolemic	Eplerenone can be used if gynecomastia	Reduces mortality in HFpEF as well				Provide education on daily weights, medication compliance and 2 Gm Na diet
	Start prior to D/C, reduces mortality							

ACID/BASE

pH <7.36 → **Acidosis**

pH >7.44 → **Alkalosis**

Acidosis

PaCO2 <40 → **Metabolic Acidosis**

PaCO2 >40 → **Respiratory Acidosis**

Metabolic Acidosis

Non-Gap ≤12
- Winter's Formula
- Urine Anion Gap

Gap >12
- Delta Gap
- Winter's Formula
- Osmolar Gap

See Metabolic Acidosis Chart

Respiratory Acidosis

Calculate ΔPaCO2 vs ΔpH

Acute
- Respiratory Failure
- Inadequate Ventilation
- Obstruction

Chronic
- COPD
- VQ Mismatch
- Obesity Hypoventilation Syndrome
- ALS
- Interstitial Fibrosis

Alkalosis

PaCO2 <40 → **Respiratory Alkalosis**

PaCO2 >40 → **Metabolic Alkalosis**

Respiratory Alkalosis

Calculate ΔPaCO2 vs ΔpH
- Lung Disease –> PNA
- Fever
- Psych: Hyperventilation
- CNS: CVA, SAH, Meningitis
- Pregnancy
- Ammonia
- High Altitude

Metabolic Alkalosis

Urine Cl <10 → **Chloride Responsive**

Urine Cl >10 → **Chloride Non-Responsive**

Chloride Responsive

Loss of H+ Ions
- Vomiting
- Renal Loss
- Contraction Alkalosis
- Diuretic
- Cystic Fibrosis
- Post-Hypercapnic

Chloride Non-Responsive

Retention of Bicarb
- Hypokalemia
- Iatrogenic HCO3
- Hyperaldosteronism
- Licorice (glycyrrhizin)
- Bartter's, Gittleman's, Liddle's Syndromes

HTN
- 11 β-Hydroxylase def.
- 17 α-hydroxylase def.

Corrected Normal Anion Gap

Anion Gap + 2.5(4 – albumin)

Osmolar Gap (serum)

Calc Osm 2x[Na] + [glucose]/18 + [BUN]/2.8

Osmolar Gap = Measured OSM – Calculated

Winter's Formula

$PaCo2_{(expected)} = (HCO_3^- \times 1.5) + 8 +/- 2$

- If actual PaCO2 is higher than expected there is also a respiratory acidosis
- If actual PaCO2 is lower there is also a respiratory alkalosis

Delta Gap

$HCO_{3\,(Corr.)}^- = HCO_{3\,(Actual)}^- + (\text{Anion Gap} - 12)$

- If $HCO_{3\,(Corr.)}$ >24 there is also a Metabolic Alkalosis
- If $HCO_{3\,(Corr.)}$ <16, there is also a non-gap metabolic acidosis

Change in PaCO2

Does PaCO2 explain the whole shift?

ΔPaCO2 of 10 = ΔpH 0.08 for acute

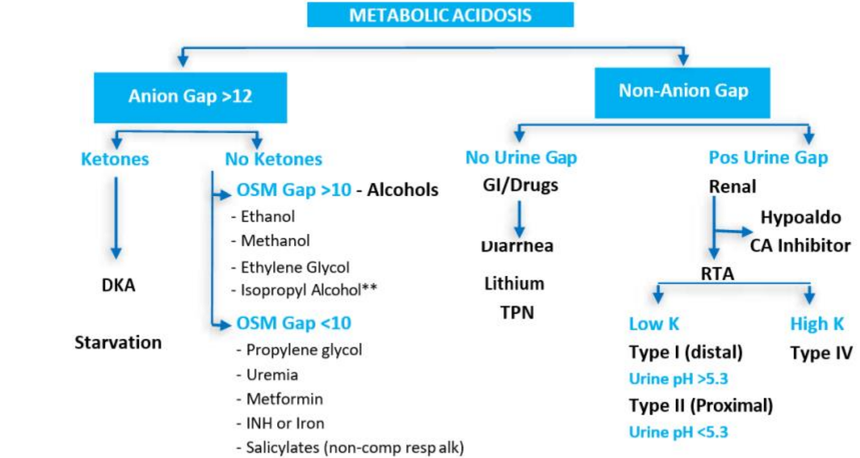
ΔPaCO2 of 10 = ΔpH 0.03 for chronic

- If actual pH ↓ there is also Met Acidosis
- If actual pH ↑ there is also Met Alkalosis

Urinary Anion Gap

UAG = Na + K – Cl (all urine electrolytes)

> 0 likely renal source; < 0 non-renal



**Isopropyl Alcohol does not cause an anion gap but does cause an osmolar gap

Pulmonology

PFT Algorithm

Pulmonology

Pulmonary Embolism/DVT

Well's Score for PE	
Risk Factor	**Points**
Clinical suspicion of DVT	3
Alternative diagnosis is less likely than PE	3
Tachycardia rate >100	1.5
Immobilization ≥ 3d or surgery in last 4 wks	1.5
History of DVT	1.5
Hemoptysis	1
Malignancy (treated within 6mo or palliative)	1

Score	% Chance of PE	Recommended Action
<2	15	D-Dimer
2-6	29	D-Dimer vs. CTA/VQ
>6	59	CTA/VQ scan

Thoracentesis Fluid Analysis

Light's Criteria
1. Ratio of pleural fluid protein to serum protein > 0.5
2. Ratio of pleural fluid LDH and serum LDH is > 0.6
3. Pleural fluid LDH is > 2/3 upper limit of normal for serum
Interpretation: If at least one of above criteria is true effusion is likely an Exudate.
LDH can be increased in the pleural fluid if patient is on diuretic or volume deplete

Alternative Tests
1. Serum albumin - fluid albumin <1.2 g/dL
2. Pleural fluid cholesterol >45 mg/dL
3. Pleural fluid protein >2.9 g/dL
Interpretation: If 1 of these is true = exudate. At least two must be false to be transudate.

Nephrology

HYPONATREMIA

Hypovolemic
- Volume Loss
- Addison's Disease
- Diuretics

Euvolemic
- Severe Pain or Nausea
- Brain Damage (TBI)
- SIADH
- Hypothyroidism
- Adrenal Insufficiency
- Pseudohyponatremia
- Beer Potomania/Poor Solute Intake

Hypervolemic
- Cirrhosis
- CHF
- Nephrotic Syndrome
- Massive Edema

Rapid correction > 0.3 mEq/L per hour up or > 8 mEq/L per day can lead to Central Demyelination

SIADH Causes (include but not limited to)
Meningitis
Head injury
Cancers – specifically small cell lung and other small cell
Infectious – brain abscess, PNA, lung abscess
Guillain-Barre
Drugs – Phenothiazine, Cyclophosphamide, Carbamazepine, SSRI, MDMA, Oxytocin, Vincristine, Morphine, Amitriptyline, Chlorpropamide, Clofibrate, Ifosfamide
Hypothyroidism
Sarcoidosis

Lab Findings in SIADH
Na <134 AND Serum OSM <275; OR (Serum OSM) – BUN < 280.
Urine OSM >100
Urine Na >40mEq/L (with normal dietary salt intake ~4gm/day)

Nephrology

HYPERNATREMIA

- **Hypovolemic** → Free Water Deficit
- **Euvolemic** → Diabetes Insipidus
- **Hypervolemic** → Iatrogenic (note NS is actually hypertonic)

Rapid correction > 0.5 mEq/L per hour > 10 mEq/L per day can lead to Cerebral Edema

Replacing Free water

1. Calculate Free Water Deficit (FWD) and Sodium Excess (SE)

FWD = (0.5{if normal BMI} * Weight(Kg)) (Serum Na/140 - 1)

SE = Serum Sodium – 140{normal sodium}

2. Determine Rate of Correction

SE/10{max correction rate/day} = D{days to correct Na}

D * 24 = H{Hours to correct Na}

FWD*1000/H = Rate of correction {in ml/hr}

3. Add Insensible loses (water lost due to normal body function)

+ 40ml/hr

4. Account for type of fluid used
   - ½ normal saline: multiply rate by 2
   - ¼ normal saline: multiply rate by 1.5
   - D5W: no correction

AKI

Subject	Definition		
Baseline sCr	A value of sCr obtained in the previous 3 months, when available, can be used as baseline sCr. In patients with more than one value within the previous 3 months, the value closest to the admission time to the hospital should be used. In patients without a previous sCr value, the sCr on admission should be used as baseline.		
Definition of AKI	• Increase in sCr ≥0.3 mg/dl (≥26.5 μmol/L) within 48 hours; or, • A percentage increase sCr ≥50% from baseline which is known, or presumed, to have occurred within the prior 7 days		
Staging of AKI	• **Stage 1**: increase in sCr ≥0.3 mg/dl (26.5 μmol/L) or an increase in sCr ≥1.5-fold to 2-fold from baseline • **Stage 2**: increase in sCr >2-fold to 3-fold from baseline • **Stage 3**: increase of sCr >3-fold from baseline or sCr ≥4.0 mg/dl (353.6 μmol/L) with an acute increase ≥0.3 mg/dl (26.5 μmol/L) or initiation of renal replacement therapy		
Progression of AKI	**Progression** Progression of AKI to a higher stage and/or need for RRT	**Regression** Regression of AKI to a lower stage	
Response to treatment	**No response** No regression of AKI	**Partial response** Regression of AKI stage with a reduction of sCr to ≥0.3 mg/dl (26.5 μmol/L) above the baseline value	**Full response** Return of sCr to a value within 0.3 mg/dl (26.5 μmol/L) of the baseline value

Nephrology

PHOSPHORUS
Normal = 2.5-4.5 mg/dL
● Caution in hypocalcemia
● Caution if eGFR <30
● Neutral refers to charge. K-Phos original has a negative charge

PO Replacement	
Neutra-Phos	1 packet = 8mm Phos, 7.1mEq K, 7.1mEq Na
Neutra-Phos K	1 packet = 8mmol Phos, 14.2mEq K
K-Phos Neutral	1 tab = 8mmol Phos, 1.1mEq K, 13mEq Na
K-Phos Original	1 tab = 8mmol Phos, 3.7mEq K

16mmol replacement will cause Serum phos to go up ~1mg/dL		
Serum PO4	eGFR >30	eGFR <30
1.7-2.4	16mmol	8mmol
1.1-1.6	32mmol	24mmol
<1.1	Replace IV	Replace IV

IV Replacement	
NaPhos	Infuse over 4-6h
KPhos	Infuse over 4-6h (22mEq K per 15mm Phos)

16mmol replacement will cause Serum phos to go up ~1mg/dL		
Serum PO4	eGFR >30	eGFR <30
1.7-2.4	15 mm	9mm
1.1-1.6	30 mm	15mm
<1.1	45 mm	15mm

CALCIUM
Normal Ionized = 4.5-6.5 mg/dL (at VA 1.12-1.32 mmol/L)
● Mildly Low Ca can be replaced with Calcium Carbonate 1250mg 2 Tabs PO BID x2 doses
● Replace based on ionized calcium

IV Replacement	
Calcium Gloconate	Infuse over 30min per 1Gm
Calcium Chloride	3x more elemental Ca than in CaGluconate!

1 Gm replacement will cause Ionized Ca to go up ~1mg/dL		
Serum Ca	Replace	Re-Check
4.01-4.4mg/dL (1.0-1.1mm/L)	1 Gm Ca Gluc	With AM labs
3.2-4mg/dL (0.8-1.0mm/L)	2 Gm Ca Gluc	2 hrs post infusion
<3.2mg/dL (<0.8mm/L)	2 Gm Ca Gluc	2 hrs post infusion

Nephrology

MAGNESIUM
Normal = 1.6-2.3 mg/dL
● Caution if eGFR <30

PO Replacement		
Magnesium Oxide (generally not used with side effect of diarrhea)		
800mg Replacement will cause Serum Mg to go up ~0.2mg/dL		
Serum Mag	eGFR >30	eGFR <30
1.6-1.9	800mg	400 mg
<1.6	Replace IV	Replace IV

IV Replacement (preferred)		
Magnesium Sulfate	Infuse over 1hr per 2 Gm of Mag	
2Gm Replacement will cause Serum Mg to go up ~0.5mg/dL		
Serum Mag	eGFR >30	eGFR <30
1.6-1.9	2 Gm	1 Gm
1.0-1.6	4 Gm	2 Gm
<1.0	6 Gm	3 Gm

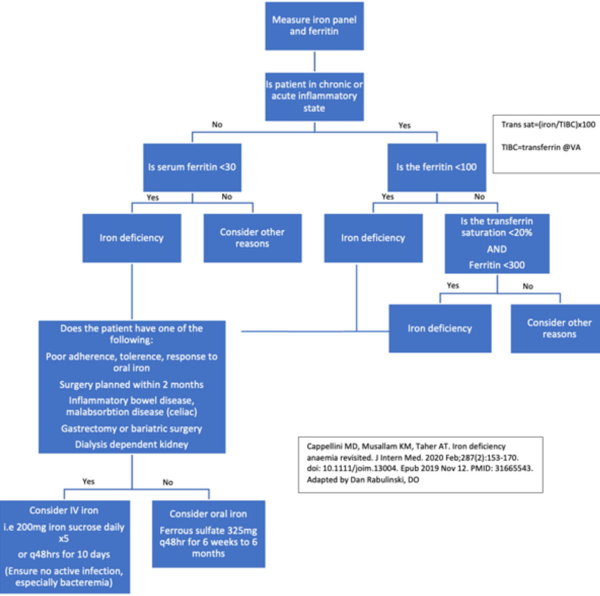
POTASSIUM
Normal = 3.5-5.0 mmol/L
● Extreme Caution in Renal Failure
● Check Magnesium – low Mag will cause low K
● Can stop the heart if given quickly -> use recommended rates
● Many Phosphorus replacements contain K –> see Phos section

PO Replacement	
KCl ER tabs	ER Formulation allows for single large doses
	If dose >60mEq consider splitting dose
	Tabs are large and may be hard to swallow
KCl Liquid (powder packets)	Do not exceed 40mEq in single dose
	Can do 40mEq Q4-6 hours to achieve desired effect
10mEq Replacement will cause Serum K to go up 0.1 mmol/L	
Replace to get K > 3.5 unless otherwise indicated	

IV Replacement	
KCl	Is painful in peripheral IV if given alone
	Peripheral IV: Up to 10mEq/hr
	Central Line: Up to 20mEq/hr
10mEq Replacement will cause Serum K to go up 0.1 mmol/L	
Replace to get K > 3.5 unless otherwise indicated	

Hematology/Oncology

Iron Deficiency Workup



Cappellini MD, Musallam KM, Taher AT. Iron deficiency anaemia revisited. J Intern Med. 2020 Feb;287(2):153-170. doi: 10.1111/joim.13004. Epub 2019 Nov 12. PMID: 31665543. Adapted by Dan Rabulinski, DO

Transfusion Medicine

Thromboelastogram Interpretation:

Blood Product Transfusion

Product	Indication	Notes
Packed Red Blood Cells	Hgb <7 standard Hgb <8 if ACS/ortho/cardiac surgery	1U → ↑Hgb ~1
Platelets	<10K PPX spontaneous bleed <50K + active bleed <100K post-bypass bleed/ICH	1U → ↑Plt ~30K
Fresh Frozen Plasma	Active Bleed, Cirrhosis, VKA reversal, DIC; Can worsen variceal bleed due volume	1U → ↑coag activity~10% Max INR correction 1.7
Cryoprecipitate (Dosed in units of 5)	Fibrinogen <100; Cirrhosis, massive transfusion, complex cardiac surgery, post-partum, FVIII deficiency, VWD	1U → ↑ fibrinogen 7-10mg/dL
Concentrated Coagulants (1 factor, 3 factor or 4 Factor PCC)	Coag Factor Deficiency, VWD, Life-threatening reversal of DOAC/VKA	Risk of thrombosis
Albumin (5% volume depletion or 25% low oncotic pressure)	HRS, SBP, LVP, Shock, ARDS	Expensive, limited indications
Antifibrinolytics (Aminocaproic Acid/Tranexamic Acid)	Cirrhosis, Post-partum hemorrhage, Trauma, Cardiac Surgery, refractory bleed	Risk of thrombosis and seizures

Massive Transfusion:

For every 2-4 pRBC → 1U FFP, 1U Plt and 10U cryo. *Replace Calcium

Transfusion Reactions

Acute Hemolytic Anemia	~15 min, fever, flank pain, bleeding, DIC, +DAT
Febrile Non-Hemolytic Anemia	1-6 hrs, fever, flushing, -DAT
Anaphylactic Anaphylactoid	~mins, ↓BP, urticaria, wheeze, angioedema
Transfusion-Related Acute Lung Injury (TRALI)	1-6hrs,↓SpO2, ARDS, no cardiac dysfunction
Transfusion-Associated Circulatory Overload (TACO)	1-6hrs,↓SpO2, cardiogenic pulm edema, ↑BNP

Source: 1) UpToDate 2) Sabatine M. Pocket Medicine 6th Edition . 2017

Rheumatology

Gaint Cell Arteritis

Polymyalgia Rheumatica

Procedures Timeout Template

Pre-Procedure Timeout Checklist	
Data	**Check Data** ❑ Labs: PT/INR, CBC, hx HIV/HCV/HBV ❑ Precautions maintained: MRSA, HIV, C-diff
Team	**Introduce members of team**
Patient	**Verify Patient** ❑ Patient name – verify w/ ID wristband ❑ Patient MRN or SSN – verify w/ ID wristband ❑ Consent obtained ❑ Allergies reviewed
Prep	**Verify and prep for procedure** ❑ Procedure verified ❑ Site marked ❑ Appropriate position ❑ Equipment in place ❑ Medical images reviewed ❑ Pre-procedure medication given
Record	**Documentation** ❑ Document timeout in procedure note

Infectious Disease

BUMCP Antibiogram

Infectious Disease

Precaution Guidance

Isolation	Pt Population & Transmission	Description	Examples
Contact	Transmitted by direct or indirect contact with patient or his/her environment	- Hand hygiene + nonsterile gloves + isolation gowns - **<u>Do not touch phones, beepers, notes while in room</u>** - Remove gown and gloves *together* with only touching inside of PPE with bare hands, dispose of in the room - Dedicate the use of equipment (stethoscope, BP cuff) to avoid sharing with other patients. All equipment residing within the Contact Isolation room is presumed contaminated. - Disinfect using correct wipes for pathogen of concern	MRSA† VRE† MDROs† CRE Lice / Scabies Uncontained drainage (abscesses)
Contact PLUS	Patients with known/suspected spore forming or alcohol-resistant organisms transmitted by indirect/direct contact	- Contact instructions as above - After doffing; wash hands with soap and water for 15-20 seconds, dry, then use CalStat; Bleach wipes for equipment - **Isolate patient empirically while awaiting results of tests for *C. diff* and Noro**	*C. diff* Norovirus *C. auris* Cutaneous anthrax
Droplet	Patients with organisms transmitted by large respiratory droplets (coughing, sneezing, talking)	- Disposable surgical mask must be worn when entering the room. Discard upon exit. - Patient travel: <u>surgical</u> mask - **Isolate patient empirically while awaiting results for bacterial meningitis, influenza, pertussis**	*N. meningitidis* (1st 24 hrs of effective antimicrobial therapy) Influenza (*N95 for aerosol-generating proc.) Pertussis
Enhanced Respiratory Isolation	COVID-19	- Contact + Eye Protection + N95 - Isolation; no need for ⊕ press. unless aerosolizing proced. - Patient travel: <u>surgical</u> mask	COVID-19
Airborne	Transmitted by droplet nuclei that can remain suspended in the air and disperse widely	- Isolation in negative pressure room with door closed - <u>N95</u> respirator (fit-tested) to enter the room; retest if weight +/- 20lbs; PAPR for facial hair or if not fit-tested - Patient travel: <u>surgical</u> mask - Visitors are asked to wear N95 respirator, no fit testing required, but should be shown how to wear it correctly	Pulmonary TB Measles Varicella Disseminated herpes zoster
Enhanced Isolation	Required for patients with Cystic Fibrosis	- Contact + private room limitations on use of shared spaces	
Strict Isolation	Patients w/ highly pathogenic organisms	Airborne + Contact + Eye Protection If suspected, isolate and contact Biothreats Pager (26876)	SARS / MERS Avian Influenza

† Pts will be identified in the Infection Status banner in EPIC, removal of precautions discussed below

Average Antibiotic Cost

Daily Cost of Common Antibiotics

$: Amikacin, amoxicillin, amoxicillin-clavulanate, azithromycin, cefdinir, ceftriaxone, cephalexin, ciprofloxacin, clindamycin (PO), doxycycline, gentamicin, levofloxacin, linezolid (PO), metronidazole, nitrofurantoin, piperacillin-tazobactam, sulfamethoxazole-trimethoprim, tobramycin, vancomycin
$$: Ampicillin (IV), cefazolin, cefepime, ceftazidime, clindamycin (IV), doxycycline (IV), linezolid (IV), meropenem, nafcillin, penicillin, polymyxin b
$$$: Ampicillin-sulbactam, cefoxitin, eravacycline, ertapenem, fosfomycin
$$$$: Aztreonam, daptomycin, fidaxomicin, tigecycline
$$$$$: Ceftaroline, ceftazidime/avibactam, ceftolozane/tazobactam, dalbavancin, oritavancin
Average cost/day of therapy $ < 10, $$ 11-50, $$$ 51-100, $$$$ 101-500, $$$$$ > 500

Daily Cost of Common Antifungals

$: Fluconazole
$$: Voriconazole (PO)
$$$: Flucytosine, micafungin, posaconazole (oral DR tablets), voriconazole (IV)
$$$$: Isavuconazole (maintenance doses), posaconazole (IV; oral suspension)
$$$$$: Amphotericin B liposomal
Average cost/day of therapy $ < 10, $$ 11-50, $$$ 51-100, $$$$ 101-500, $$$$$ > 500

Daily Cost of Common Antivirals

$: Acyclovir (PO), valacyclovir
$$: Acyclovir (IV), oseltamivir, valganciclovir
$$$: Baloxavir, ganciclovir (IV)
$$$$: Cidofovir
$$$$$: Foscarnet
Average cost/day of therapy $ < 10, $$ 11-50, $$$ 51-100, $$$$ 101-500, $$$$$ > 500

Infectious Disease

VA Antibiogram

VA Guidance Empiric Antibiotics

Inpatient

Outpatient

INFECTIOUS DISEASE

Clostridium Difficile Infection Clinical Guidelines

Critical Care

ECMO

Types:
- VV-ECMO: For lung failure
- VA-ECMO: For heart failure

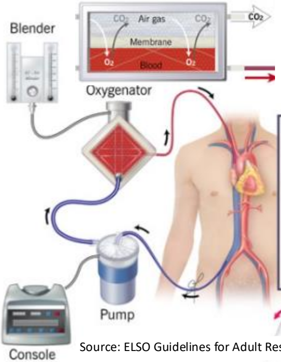
Indications: ***Calculate RESP Score**
- Severe hypoxemia (P/F <100mmHg) for at least 6hrs with potentially reversible respiratory failure.
- Uncompensated hypercapnia with acidemia (pH <7.15)
- Excessively high Pplat (>35-45cm H2O)

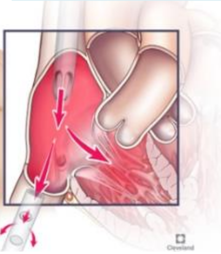
Contraindications:
- *Relative:*
  - High pressure ventilation for >7 days
  - High FiO2 requirements for >7 days
  - Limited vascular access
  - Any condition/organ dysfunction that would limit overall benefit, e.g. brain injury or metastatic cancer.
- *Absolute*:
  - Any condition that precludes anticoagulation

Complications:
- Bleeding
- Thromboembolism
- CVA
- Cannula Trauma
- HIT
- VA ECMO specific: pulmonary hemorrhage, cardiac thrombus, coronary/cerebral hypoxia, CVA

Monitoring:
- *Lungs:*
  - Pressure Control "Rest" Ventilation,
  - Monitor Tv daily, goal >4cc/kg/min
- *Oxygenation:*
  - Flow Rate 50-80cc/kg/min, usually ~4-5L/min
  - SaO2 >75%
  - ScvO2 20-25% < SaO2 (Typically >65%)
  - Adequate tissue perfusion (MAP >65, SvO2 >65>, normal LA)
  - Plasma free Hgb <10mg/dL, attempt to decrease pressure if rising.
  - Pre-membrane/inlet pressure <100mmHg, if high "chugging" give fluid or reposition
  - Post-membrane/outlet pressure <200-250mmHg, if high reposition, lower BP/volume
  - Delta pressure <20mmHg if high change AC/ oxygenator
- *Ventilation:*
  - Adjust Sweep to maintain PCO2 < 40mmHg, pH >7.2
- *Anticoagulation:*
  - Heparin/Bivalirudin: aPtt > 1.5 x baseline, adjust based on clotting/bleeding.
  - If clots <5mm/enlarging, consider adjust AC or replacing.
- *Cannula:*
  - One double lumen or two single lumen
  - Can add additional to increase return rate

Weaning:
- Consider if <30% lung support
- Start to decrease flow by 1L/min or decrease to 2L/min then wean sweep/FiO2.
- If SaO2 >95%/PaCO2 <50 for 60 minutes, safe to come off.





Source: ELSO Guidelines for Adult Respiratory Failure. August, 2017 and UpToDate

Pharmacy

Opiods

Opioid Equivalency Chart					
	Equianalgesic Dose		Route	Frequency (qHours)	Onset (Minutes)
	IV	PO			
Morphine	**10mg**	**30mg**	PO IR	3-6	30
			PO SR	8-12	30
			PO Liq	3-6	30
			IV	3-4	5-10
Hydromorphone (Dilaudid)	**1.5mg**	**7.5mg**	PO	3-6	15-30
			IV	3-4	5-10
Oxycodone	**NA**	**20mg**	IR	3-6	15-30
			SR	12	30
			PO Liq	3-6	15-30
Codeine	**NA**	**200mg**	PO	4-6	30-60
Fentanyl (Not patch)	**100mcg**	**NA**	Patch	72	8-16 hrs
			IV	0.5-2	5-10
Hydrocodone	**NA**	**30 mg**	PO	4-6	15-30
			PO Liq	4-6	20-30
Meperidine* (Demerol)	**100mg**	**300mg**	PO	2-4	15-30
			IV	2-3	2-5
Methadone	HIGHLY VARIABLE: Consult experienced provider		PO	6-8	30-60
			PO Liq	6-8	30-60
			IV	6-8	10-20

***Meperidine is not recommended** due to potential for neurotoxic metabolite accumulation

Beta-Blockers

Beta-Blocker Equivalency Chart			
Beta-Blocker	Equivalent Dose mg	Freq	Beta 1 Selective?
Atenolol	50	Daily	Yes
Carvedilol	12.5	BID	No
Labetalol	100	BID	No
Metoprolol Tartrate	50	BID	Yes
Metoprolol Succinate	100	Daily	Yes
Propranolol	40	BID	No
Nebivolol (Bystolic)	10	Daily	Yes

Pharmacy

Steriods

Steroid Equivalency Chart			
	Glucocorticoid Dose (mg)	**Mineralo-Corticoid**	**½ Life (hr)**
Short Acting			
Cortisone	25	0.8	8-12
Hydrocortisone	20	1	8-12
Intermediate Acting			
Prednisone	5	0.8	18-36
Prednisolone	5	0.8	18-36
Triamcinolone	4	0	18-36
Methylprednisolone	4	0.5	18-36
Long Acting			
Dexamethasone	0.75	0	36-54
Betamethasone	0.6	0	36-54
Mineralocorticoids			
Fludrocortisone	0	150	24-36
Aldosterone	0	400+	-

Statins

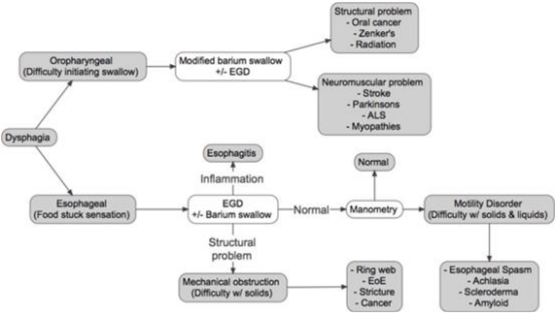
HMG-CoA Reductase Inhibitor Equivalency Chart					
% LDL Lowering	Pravastatin (Pravachol)	Lovastatin (Mevacor)	Simvastatin (Zocor)	Atorvastatin (Lipitor)	Rosuvastatin (Crestor)
<24	10	10	5	-	-
25-32	20	20	10	-	-
31-39	40	40	20	10	-
37-45	80	80	40	20	5
48-52	-	-	~~80~~	40	10
55-60	-	-	-	80	20
60-63	-	-	-	-	40

Moderate Intensity Statins

High Intensity Statins

GASTROENTEROLOGY

Dysphagia



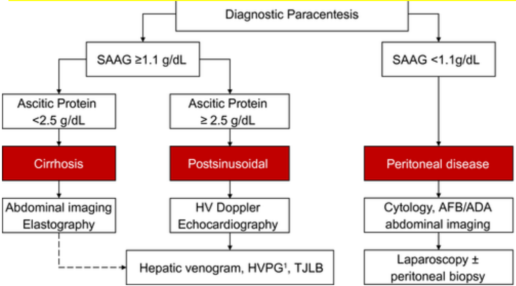
Acute Pancreatitis

Revised Atlanta Classification

Two Phases	***Early*** — *Within 1st week*		***Late*** — *After 1st week*
Severity	***Mild*** — *No organ failure*	***Moderate*** — *Organ failure <48 hrs*	***Severe*** — *Organ failure >48 hrs*
Two Types	***Edematous***		***Necrotizing***
Complications	*<4 wks: Acute peripancreatic collection* *>4 wks: Pseudocyst*		*<4 wks: Acute necrotic collection* *>4 wks: Walled-off necrosis*

HEPATOLOGY

Ascites Fluid Analysis



For Large Volume Paracentesis (≥5L):
-Give 6-8 g of 25% Albumin for every liter of fluid removed.

SBP Prophylaxis in Cirrhosis

Indication	Primary Regimen	Alternative Agents	Duration
GI bleeding	Ceftriaxone 1g IV QD	May switch to oral agent once bleeding resolves. Ciprofloxacin 500mg PO QD Bactrim 1DS QD	7 days
Prior episode(s) of SBP	Ciprofloxacin 500mg PO QD	Bactrim 1DS QD	Indefinite
Ascites total protein <1.5 g/dL plus one of the following: - ***Cr ≥1.2 mg/dL*** - ***BUN ≥25 mg/dL*** - ***Na ≤130 meq/L*** - ***Childs Pugh score ≥9 + Tbili ≥3***	Ciprofloxacin 500mg PO QD	Bactrim 1DS QD	Indefinite
Hospitalized patients with ascites total protein <1.0 g/dL	Ciprofloxacin 500mg PO QD	Bactrim 1DS QD	Hospital duration

HEPATOLOGY

Treatment of Variceal Bleed

-Stabilize

(2 Large bore IVs, fluid/product (1:1:1) resuscitation, correct coagulopathy IF active bleed, d/w consults)
Transfuse with caution for overtransfusion; goal of HgB of 7-9

-IV Abx (Ceftriaxone, Fluoroquinolone)

-Octriotide IV gtt: bolus with 50mcg followed by 50mcg/hr

-IV PPI: gtt or per GI recommendation

-Endoscopy w/in 12 hrs

HRS

Definition of AKI in Cirrhosis

-Increase in serum Cr ≥ 0.3mg/dl within 48hrs or ≥50% from baseline and/or urine output ≤0.5ml/kg B.W. ≥6hr

-No full or partial response after at least 2 days of diuretic withdrawal and volume expansion with albumin. The recommended dose of albumin is 1g/kg of body weight per day to a maximum of 100 g/day

-Absence of shock

-No current or recent treatment with nephrotoxic drugs

-Absence of parenchymal disease as indicated by proteinuria > 500 mg/day, microhaematuria (>50 red blood cells per high power field), urinary injury biomarkers (if available) and/or abnormal renal ultrasonography.

Old classification	New classification		Criteria
HRS-1*	HRS-AKI		a) Absolute increase in sCr ≥0.3 mg/dl within 48 h and/or b) Urinary output ≤ 0.5 ml/kg B.W. ≥6 h* or c) Percent increase in sCr ≥50% using the last available value of outpatient sCr within 3 months as the baseline value
HRS-2*	HRS-NAKI	HRS-AKD	a) eGFR <60 ml/min per 1.73 m^2 for <3 months in the absence of other (structural) causes b) Percent increase in sCr <50% using the last available value of outpatient sCr within 3 months as the baseline value
		HRS-CKD	a) eGFR <60 ml/min per 1.73 m^2 for ≥3 months in the absence of other (structural) causes

TIPS

Indications	Contraindications
Refractory ascites	MELD Score (absolute/relative)
Recurrent variceal hemorrhage	Central HCC (absolute), Non-central HCC (relative)
Hepatic hydrothorax	Heart failure (absolute)
Refractory bleeding due to portal hypertensive gastropathy	Severe pHTN (absolute), Mild to Moderate pHTN (relative)
Budd-Chiari Syndrome	Multiple hepatic cysts (absolute)
	Sepsis (absolute)
	Unresolved biliary obstruction (absolute)
	Severe thrombocytopenia, coagulopathy (relative)
	Hepatic vein obstruction (relative)

Post-Procedure Complications/Considerations:

Hepatic encephalopathy: portosystemic shunt decreases hepatic metabolic filtering

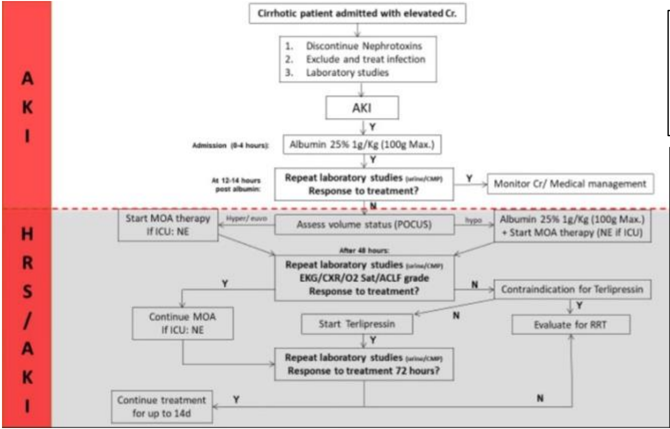
Heart Failure: increased pre-load

Liver Failure: decreased portal venous flow can lead to hepatic ischemia and ACLF

TIPS malfunction: stenosis/obstruction -> recurrence of ascites and/or bleeding

HEPATOLOGY

HRS Algorithm



MOA Therapy:

Goal: ↑Δ MAP 10-15 mmHg or MAP>80mmHg

Midodrine: start 10mg TID, increase to 15mg TID in 48hrs if MAP/BP goal not met

Octriotide: Octriotide IV gtt 50mcg/hr (preferred) OR SubQ 100-200mcg TID

Albumin: After initial bolus, continue 25% 25-50gm/d. Hold if serum albumin ≥ 4 or if MOA d/c'd

Terlipressin:

Contraindications to Terlipressin:

1. Pulmonary edema
2. Hypoxemia < 90%
3. Acute on Chronic Liver Failure (ACLF) grade 3
4. Creatinine > 5 mg/dL

Dosing:

Administer with Albumin

Initial: 0.85 mg every 6 hours for 3 days. Beginning on day 4, adjust dose based on SCr as follows:

- If Scr ↓ by ≥30% from baseline: Continue 0.85mg Q6 hrs until 24 hours after 2 consecutive SCr (at least 2 hours apart) of ≤1.5 mg/dL or for a maximum of 14 days.
- If SCr ↓ by <30% from baseline: Increase to 1.7mg Q6 hrs; continue until 24 hours after patient achieves 2 consecutive SC (at least 2 hours apart) of ≤1.5 mg/dL or for a maximum of 14 days.
- If SCr ≥ baseline: Discontinue Terlipressin

Against Medical Advice Algorithm

Assess

- Severity of illness/urgency of treatment
- Decision-making capacity (treat underlying cause if impaired)
- Degree of risk to patient's health and welfare

Investigate

- Patient's reason for leaving
- Comfort (symptom management)
- Communication regarding care plan
- Withdrawal syndromes
- Pressing responsibilities like child, elder, or pet care issued
- Allies such as primary care provider or family member

Mitigate

- Offer maximal necessary treatment acceptable to patient.
- Provide prescriptions for mediations as indicated.
- Provide optimal follow-up plan and discharge instructions.

Explain

- Original treatment plan risks and benefits
- Specific dangers of failing to follow proposed plan
- Alternative plan
- Discharge instructions including reasons to return.
- That the patient is welcome to return at any time

Document

- Medical screening exam
- Decision-making capacity assessment
- Discussion of initial treatment offered
- Discussion of patient refusal and reasoning
- Efforts to negotiate, recruit family/friends
- Alternative plan with risks and benefits
- Discharge instructions including when to return
- Efforts to locate if no discharge conversation occurred

Outpatient USPSTF screening recommendations

Adult Preventive Health Care Schedule: Recommendations from the USPSTF *(as of May 9, 2022)*

To be used in conjunction with USPSTF recommendation statements (for additional details see tables and references at https://www.aafp.org/afp/PHCS)

Only grade A/B recommendations are shown

Age	18	21	24	25	35	40	45	50	55	59	65	70	74	75	80
USPSTF screening recommendations															
Alcohol misuse[1]	(B)														
Unhealthy drug use[2]	(B)														
Depression[3]	(B)														
Hypertension[4]	(A)														
Obesity/weight loss[5]	(B) if BMI 30 kg per m² or greater														
Tobacco use and cessation[6]	(A)														
Hepatitis C virus infection[7]	(B)														
HIV infection[8]	(A)											(A) <u>if at increased risk</u>			
Hepatitis B virus infection[9]	(B) <u>if at increased risk</u>														
Syphilis[10]	(A) <u>if at increased risk</u>														
Tuberculosis[11]	(B) <u>if at increased risk</u>														
BRCA gene risk assessment[12]	(B) if appropriate personal or family history of ***BRCA***-related cancer or ancestry														
Chlamydia and gonorrhea[13]	(B) if sexually active			(B) <u>if at increased risk</u>											
Intimate partner violence[14]	(B) women of childbearing age														
Cervical cancer[15]		(A) See p. 3 for test options and screening intervals													
Prediabetes and type 2 diabetes[16]					(B) if overweight or obese										
Colorectal cancer[17]							(B)	(A)							
Breast cancer[18] ★								(B) biennial screening							
Lung cancer[19]								(B) if 20-pack-year history and current or former smoker (quit in past 15 years)							
Osteoporosis[20]							(B) if postmenopausal and elevated risk				(B)				
Abdominal aortic aneurysm[21]											(B) if an "ever smoker"				
USPSTF preventive therapies recommendations															
HIV preexposure prophylaxis[22]	(A) <u>if at high risk of HIV infection</u>														
Primary prevention of breast cancer[23]	(B) offer if at increased risk for breast cancer and low risk for side effects														
Folic acid supplementation[24]	(A) if capable of conceiving														
Statins for primary prevention of CVD[25]						(B) see criteria on p. 4									
Fall prevention in community-dwelling older adults[26]											(B) exercise interventions if at increased fall risk				
USPSTF counseling recommendations															
Sexually transmitted infection prevention[27]	(B) <u>if at increased risk</u>														
Diet/activity for CVD prevention[28]	(B) adults with CVD risk factors														
Skin cancer prevention[29]	(B) if fair skinned														
Healthy weight gain in pregnancy[30]	(B) all pregnant women														

Legend	Normal risk	With specific risk factor
Recommendation for men and women	(dark green)	(light green)
Recommendation for men only	(dark blue)	(light blue)
Recommendation for women only	(dark yellow)	(light yellow)

Recommendation grades

- A Recommended (likely significant benefit)
- B Recommended (likely moderate benefit)
- C Do not use routinely (benefit is likely small)
- D Recommended against (likely harm or no benefit)
- I Insufficient evidence to recommend for or against

BMI = body mass index; CVD = cardiovascular disease; USPSTF = U.S. Preventive Services Task Force.

Visual adaptation from recommendation statements by Swenson PF, Lindberg C, Carrillo C, and Clutter J.

★ <u>April 2024 Update</u>: USPSTF recommends biennial screening mammography for women aged 40 to 74 years (B recommendation).

ENDOCRINOLOGY

Inpatient Insulin Guide

Step 1: Discontinue Oral anti-diabetic agents and all other insulins

- Check Hgb A1c: if it's >8 consider adjusting home regimen upon discharge
- Targets: Fasting BS <140, Random <180. ICU 140-180 always
- For ICU Insulin gtt is regimen of choice unless brief stay or preparing for floor transfer

Step 2: Calculate Total Daily Dose (TDD) (choose method below)

- Transfer from gtt: Use hourly average rate over last 6 hours (exclude any additional for covering meals) multiply by 20 = TDD
- Use total insulin required at home (all types added together)
- Calculate requirement based on body size:
    a. Dialysis or CrCl <15ml/min: use 0.3units/kg/day
    b. Lean (BMI <25), CrCl 15-30, **Newly diagnosed**, Steroid induced: use 0.4units/kg/day
    c. Overweight (BMI 25-30): use 0.5 units/kg/day
    d. Obese (BMI >30): use 0.6 units/kg/day

Step 3: Distribute total daily dose (TDD) into basal AND bolus *Note: IF patient is on high dose steroids consider doing 30% basal and 70% bolus*

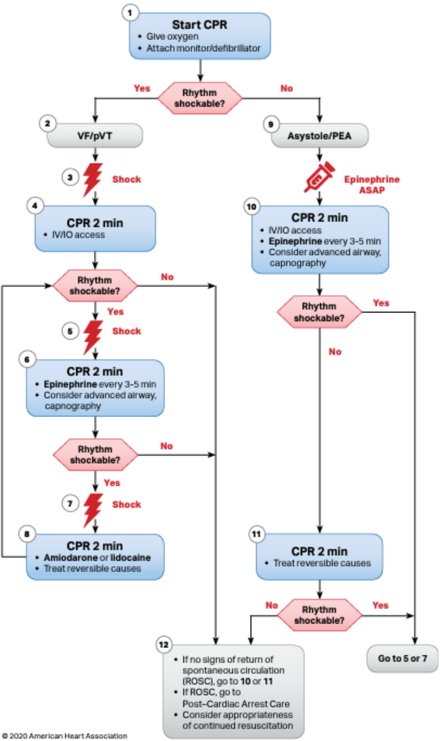
BASAL INSULIN/ Long-Acting Glargine (Lantus)	BOLUS INSULIN/Rapid Acting Lispro (Humalog) at Banner Aspart (NovoLog) at VA (for meal/nutrition coverage)
50% of TDD given q24h at time of first dose (usually QHS)	**1. Meals or 3 Bolus tube feeds** a. 50% of TDD divided into 3 equal doses prior to each meal (TIDAC) b. Consider Carb Exchange Calculation if irregular eating habits **2. Continuous Tube Feeds**: 50% of TDD divided into six equal doses Q4H.

Step 4: Evaluate insulin dose daily. Adjust as below to attain target blood sugar from step 1.

a. Some glucoses <100 -> give 50-80% of yesterday's total insulin given (including sliding scale insulin) as new total
b. Some glucoses >180 -> Give 110% of yesterday's total insulin as new total (TDD)

ACLS ALGORITHMS

Adult Cardiac Arrest Algorithm



CPR Quality

- Push hard (at least 2 inches [5 cm]) and fast (100-120/min) and allow complete chest recoil.
- Minimize interruptions in compressions.
- Avoid excessive ventilation.
- Change compressor every 2 minutes, or sooner if fatigued.
- If no advanced airway, 30:2 compression-ventilation ratio, or 1 breath every 6 seconds.
- Quantitative waveform capnography
  - If $PETCO_2$ is low or decreasing, reassess CPR quality.

Shock Energy for Defibrillation

- **Biphasic:** Manufacturer recommendation (eg, initial dose of 120-200 J); if unknown, use maximum available. Second and subsequent doses should be equivalent, and higher doses may be considered.
- **Monophasic:** 360 J

Drug Therapy

- **Epinephrine IV/IO dose:** 1 mg every 3-5 minutes
- **Amiodarone IV/IO dose:** First dose: 300 mg bolus. Second dose: 150 mg.
  or
  Lidocaine IV/IO dose: First dose: 1-1.5 mg/kg. Second dose: 0.5-0.75 mg/kg.

Advanced Airway

- Endotracheal intubation or supraglottic advanced airway
- Waveform capnography or capnometry to confirm and monitor ET tube placement
- Once advanced airway in place, give 1 breath every 6 seconds (10 breaths/min) with continuous chest compressions

Return of Spontaneous Circulation (ROSC)

- Pulse and blood pressure
- Abrupt sustained increase in $PETCO_2$ (typically ≥40 mm Hg)
- Spontaneous arterial pressure waves with intra-arterial monitoring

Reversible Causes

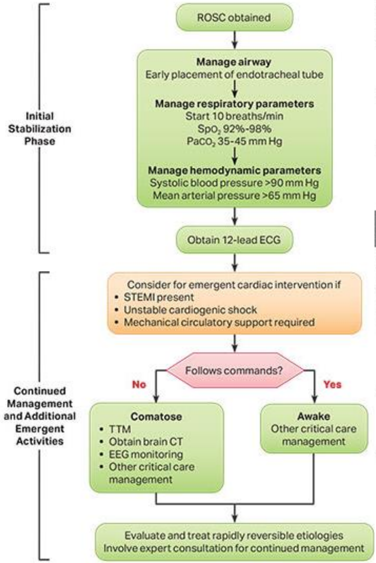
- Hypovolemia
- Hypoxia
- Hydrogen ion (acidosis)
- Hypo-/hyperkalemia
- Hypothermia
- Tension pneumothorax
- Tamponade, cardiac
- Toxins
- Thrombosis, pulmonary
- Thrombosis, coronary

1st step of the code is to check your own pulse.

Clearly defined roles are essential, lead the team!

ACLS ALGORITHMS

Adult Post–Cardiac Arrest Care Algorithm



Initial Stabilization Phase

Resuscitation is ongoing during the post-ROSC phase, and many of these activities can occur concurrently. However, if prioritization is necessary, follow these steps:

- Airway management: Waveform capnography or capnometry to confirm and monitor endotracheal tube placement
- Manage respiratory parameters: Titrate FIO_2 for SpO_2 92%-98%; start at 10 breaths/min; titrate to $PaCO_2$ of 35-45 mm Hg
- Manage hemodynamic parameters: Administer crystalloid and/or vasopressor or inotrope for goal systolic blood pressure >90 mm Hg or mean arterial pressure >65 mm Hg

Continued Management and Additional Emergent Activities

These evaluations should be done concurrently so that decisions on targeted temperature management (TTM) receive high priority as cardiac interventions.

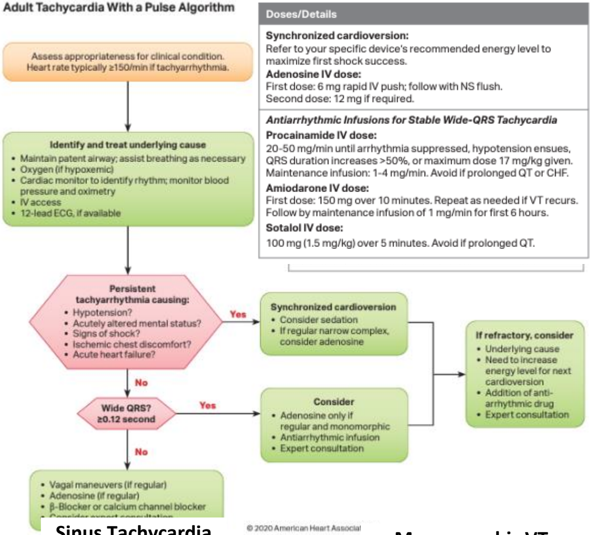
- Emergent cardiac intervention: Early evaluation of 12-lead electrocardiogram (ECG); consider hemodynamics for decision on cardiac intervention
- TTM: If patient is not following commands, start TTM as soon as possible; begin at 32-36°C for 24 hours by using a cooling device with feedback loop
- Other critical care management
  - Continuously monitor core temperature (esophageal, rectal, bladder)
  - Maintain normoxia, normocapnia, euglycemia
  - Provide continuous or intermittent electroencephalogram (EEG) monitoring
  - Provide lung-protective ventilation

H's and T's

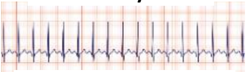
Hypovolemia
Hypoxia
Hydrogen ion (acidosis)
Hypokalemia/**h**yperkalemia
Hypothermia
Tension pneumothorax
Tamponade, cardiac
Toxins
Thrombosis, pulmonary
Thrombosis, coronary

ACLS ALGORITHMS

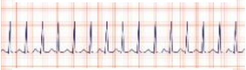
Adult Tachycardia With a Pulse Algorithm



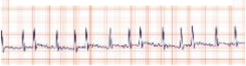
Sinus Tachycardia



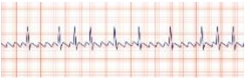
SVT (AVNRT, AVRT, AT)



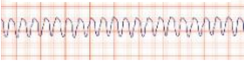
Atrial Fibrillation



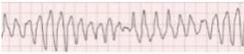
Atrial Flutter (variable conduction)



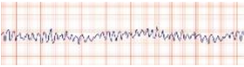
Monomorphic VT



Polymorphic VT (Torsade's)



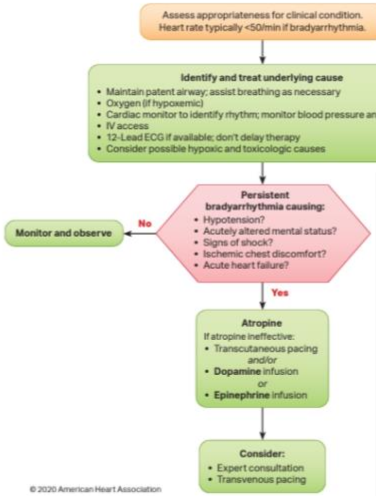
Ventricular Fib (course)



Ventricular Fib (fine)

ACLS ALGORITHMS

Adult Bradycardia Algorithm



Doses/Details

Atropine IV dose:
First dose: 1 mg bolus.
Repeat every 3-5 minutes.
Maximum: 3 mg.

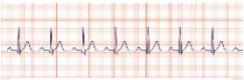
Dopamine IV infusion:
Usual infusion rate is 5-20 mcg/kg per minute.
Titrate to patient response; taper slowly.

Epinephrine IV infusion:
2-10 mcg per minute infusion.
Titrate to patient response.

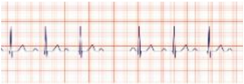
Causes:
- Myocardial ischemia/ infarction
- Drugs/toxicologic (eg, calcium-channel blockers, beta blockers, digoxin)
- Hypoxia
- Electrolyte abnormality (eg, hyperkalemia)

Sinus Bradycardia

1st Degree

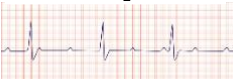


2nd Degree Type 1



2nd Degree Type 2

3rd Degree



Asystole

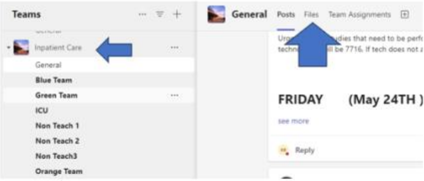
Reference Guides

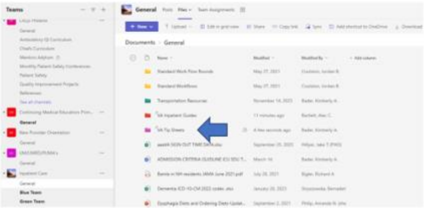
Documentation Guide

Banner Pager Guide

VA Tip Sheets

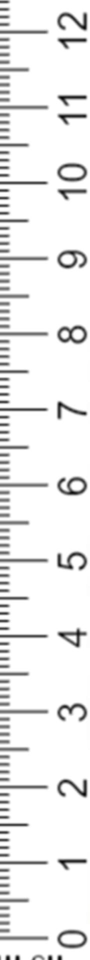
VA Tip Sheets can be found in the “Teams” tab under the “Inpatient Care” files.





Housestaff Pocketbook QR Code

Just in case a colleague forgets their book!



Hold chart at foot of patient's bed or 6 feet

E 20/200

F P 20/100

T O Z 20/70

L P E D 20/50

P E C F D 20/40

E D F C Z P 20/30

F E L O P Z D 20/25

D E F P O T E C 20/20