Ambulatory Care Case-Based Reviews

Chronic Endocrine & Psychiatric Disorders

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HIGH-YIELD
MED REVIEWS

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HIGH-YIELD
MED REVIEWS

Basic Rules

- Learning should be
  - Easy to understand clinically relevant
  - Evidence-based
  - Oriented to the patient but …..
- It also should be FUN

Introduction

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HIGH-YIELD
MED REVIEWS

Agenda

- Case-based reviews
- A special coupon code & feedback
- Live Q&A

Integrated Case-Reviews

- Case 1 continued -

HIGH-YIELD
MED REVIEWS

HIGH-YIELD
MED REVIEWS

Case 1

- A 54-year-old hispanic female with a PMH of DM2, HTN, HFrEF, chronic low-back pain comes in by EMS with reports of waking up this morning with a sudden onset of shortness of breath and found to have flash pulmonary edema in the context of uncontrolled HTN and known HF.
- The patient was stabilized, underwent diuresis, and was sent home.
- What was the patient's cause for exacerbation?

HIGH-YIELD MED REVIEWS

Case 1

- Current Meds:
  - Metformin, glyburide, lisinopril, metoprolol tartrate, furosemide
- Current VS:
  - T = 98.7, P = 68, BP = 145/91, RR = 14, O2Sat = 96%
  - Ht: 5' 7", Wt = 95 kg, Waist circumference = 42"
    - IBW = 62 kg and BMI = 32.8 (Obese)

HIGH-YIELD MED REVIEWS

Table 6. Classification of Overweight and Obesity by BMI and Waist Circumference (31 [EL 4; NE])

Classification	BMI		Waist	
	BMI (kg/m²)	Comorbidity Risk	Waist Circumference and Comorbidity Risk	
			Men ≤40 in (102 cm) Women ≤35 in (88 cm)	Men >40 in (102 cm) Women >35 in (88 cm)
Underweight	<18.5	Low but other problems		
Normal weight	18.5–24.9	Average		
Overweight	25–29.9	Increased	Increased	High
Obese class I	30–34.9	Moderate	High	Very high
Obese class II	35–39.9	Severe	Very high	Very high
Obese class III	≥40	Very severe	Extremely high	Extremely high

Abbreviations: BMI = body mass index; in = inches.

AACE Obesity Guidelines 2016

HIGH-YIELD MED REVIEWS

Case 1
- Evaluation & Workup -

- Labs:
  - CBC = nml
  - BMP: Cr = 1.1, Glucose = 145 (fasting)
  - HgbA1C = 7.8%
  - TSH = 2.1
  - Lipids: TC = 205, HDL = 32, TG = 210, LDL = 131
  - BNP = 140 pg/mL
- ECHO:
  - Baseline (34%) vs. Current (31%)
- NYHA Class II:
  - Mild symptoms & limitations during ordinary activity

HIGH-YIELD MED REVIEWS

Case 1
- Initial Plan -

- Problem List:
  - HFrEF (Stage C)
    - Switch patient from ACEi to ARNI
    - Switch metoprolol tartrate to carvedilol or metoprolol succinate
    - Add SGLT2i (Dapagliflozin or Empagliflozin)
    - +/- MRA
    - Consider ICD placement since HFrEF with EF < 35% + NYHA II
  - HTN (uncontrolled?)
    - Re-evaluate after the above for HF
  - Hyperlipidemia (uncontrolled and untreated)
    - Improved DM control + weight loss
    - Moderate-intensity statin (atorvastatin, rosuvastatin)
  - DM2 (uncontrolled)
  - Obesity

HIGH-YIELD MED REVIEWS

Case 1
- Remainder of the Plan -

- What was missing in our initial work-up that needs to be done?
  - Labs
    - Urinary albumin-to-creatinine (UACR) ratio
    - eGFR measurement
  - Criteria
    - 2 separate elevated UACR values within 3-6 months
      - Results can vary >20%
      - Exercise, fever, infection, marked HTN or hyperglycemia, HF, or menstruation can affect
  - Results:
    - eGFR (per MDRD) = 52 mL/min/1.73 m2
    - eGFR (per CKD-EPI) = 60 ml/min/1.73 m2
    - UACR = 45 mg/g

HIGH-YIELD MED REVIEWS

Case 1
- Plan -

GFR Categories (mL/min/1.73m²)	Albuminuria Categories (mg/g)
G1 = ≥ 90	A1 = < 30
G2 = 60 – 89	A2 = 30 – 299
G3a = 45 – 59	A3 = ≥ 300
G3b = 30 – 44	
G4 = 15 – 29	
G5 = < 15	

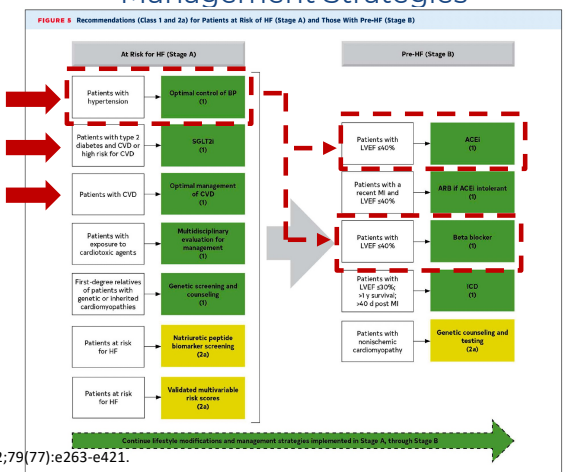
HIGH-YIELD MED REVIEWS

Case 1
- Remainder of the Plan -

- Stage C HF (HFrEF)
  - EF = 31%
  - Stopped lisinopril → valsartan 51 mg/sacubitril 49 mg BID
  - Converted the metoprolol tartrate to carvedilol 12.5 mg BID
  - Started on spironolactone 25 mg daily
  - Continued furosemide 40 mg BID
- Dyslipidemia (Primary Prevention-ASCVD; 10-yr risk = 10.3%)
  - Moderate intensity statin: atorvastatin 20 mg daily
  - But also uncontrolled DM
- Stage 2 CKD
  - UACR demonstrates risk for progression
  - Also uncontrolled DM
- Uncontrolled DM type 2 (A1C = 7.8%)
  - Currently on metformin 2000 mg daily, glyburide 5 mg daily
- Obesity (Class I)
  - With moderate to high risk of comorbidities based on waist circumference

HIGH-YIELD MED REVIEWS

Case 1
- Management Strategies -



JACC 2022;79(77):e263-e421.

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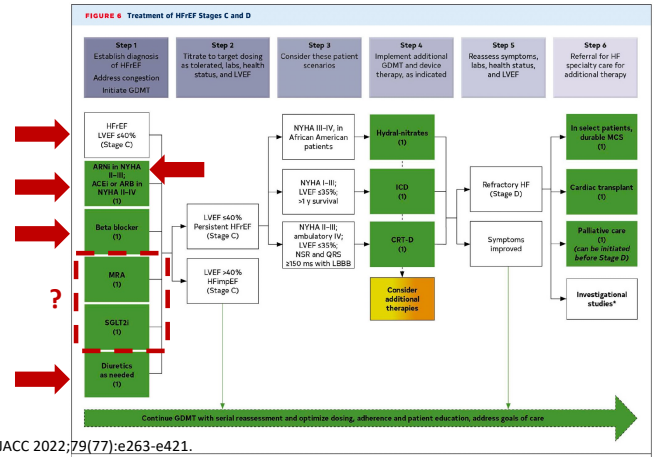

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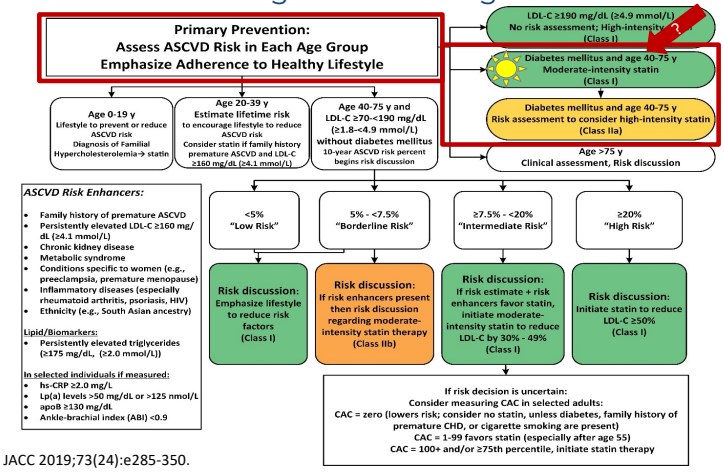

JACC 2019;73(24):e285-350.

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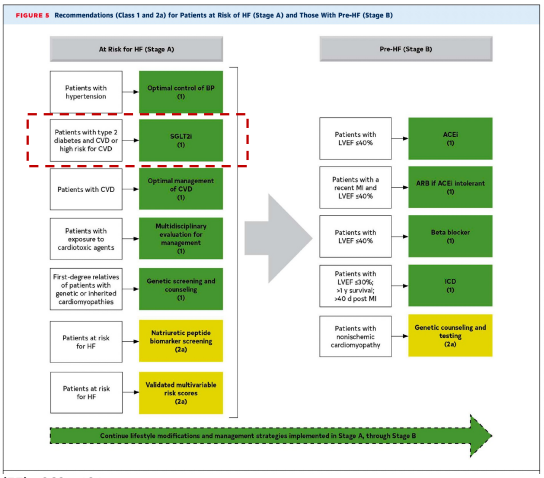
HIGH-YIELD MED REVIEWS

Integrated Case-Reviews
- What about SLGT2i? -

HIGH-YIELD MED REVIEWS

SGLT2i & HF Guidelines



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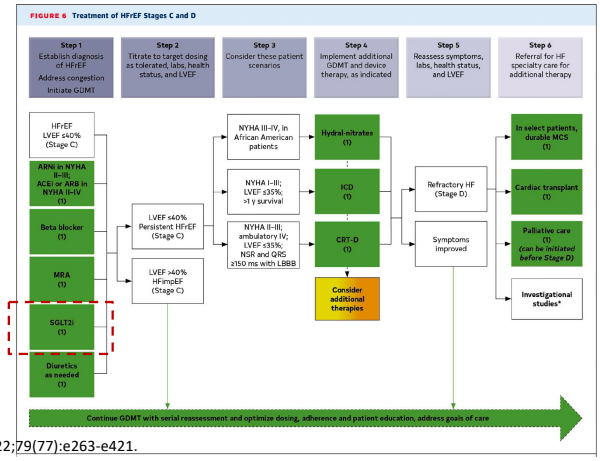
SGLT2i & HF Guidelines



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EMPEROR & DAPA-HF Trials

	EMPEROR-Reduced		DAPA-HF
	Empagliflozin (n=1863)	Placebo (n=1867)	Dapagliflozin (n=2373)
Age (yr)	67.2 ± 10.8	66.5 ± 11.2	66.2 ± 11.0
Women (%)	437 (23.5)	456 (24.4)	564 (23.8)
Diabetes mellitus (%)	927 (49.8)	929 (49.8)	993 (41.8)
Ischemic cardiomyopathy (%)	983 (52.8)	946 (50.7)	1316 (55.5%)
NYHA functional class II (%)	1399 (75.1)	1401 (75.0)	1606 (67.7%)
LV ejection fraction (%)	27.7 ± 6.0 (72% ≤30%)	27.2 ± 6.1 (75% ≤30%)	31.2±6.7
NT-proBNP (median, IQR), pg/mL	1887 (1077, 3429) (79% ≥1000)	1926 (1153, 3525) (80% ≥1000)	1428 (857-2655)
Hospitalization for heart failure within 12 months	577 (31.0)	574 (30.7)	647 (27.3)
Atrial fibrillation	664 (35.6)	705 (37.8)	916 (38.6)
Glomerular filtration rate (ml/min/1.73 m^2)	61.8 ± 21.7	62.2 ± 21.5	66.0 ± 19.6
Treatment for heart failure			
RAS inhibitor without neprilysin inhibitor	1314 (70.5)	1286 (68.9)	2007 (84.6)
RAS inhibitor with neprilysin inhibitor	340 (18.3)	387 (20.7)	250 (10.5)
Mineralocorticoid receptor antagonist	1306 (70.1)	1355 (72.6)	1696 (71.5)
Beta blocker	1765 (94.7)	1768 (94.7)	2278 (96.0)
Implantable cardioverter-defibrillator	578 (31.0)	593 (31.8)	622 (26.2%)
Cardiac resynchronization therapy	220 (11.8)	222 (11.9)	190 (8.0%)

NEJM 2020;383:1413-1424.

HF Guidelines

TABLE 15 Benefits of Evidence-Based Therapies for Patients With HFrEF (3-6,8,10-14,23,31-42)

Evidence-Based Therapy	Relative Risk Reduction in All-Cause Mortality in Pivotal RCTs, %	NNT to Prevent All-Cause Mortality Over Time*	NNT for All-Cause Mortality (Standardized to 12 mo)	NNT for All- Cause Mortality (Standardized to 36 mo)
ACEi or ARB	17	22 over 42 mo	77	26
ARNi†	16	36 over 27 mo	80	27
Beta blocker	34	28 over 12 mo	28	9
Mineralocorticoid receptor antagonist	30	9 over 24 mo	18	6
SGLT2i	17	43 over 18 mo	63	22
Hydralazine or nitrate‡	43	25 over 10 mo	21	7
CRT	36	12 over 24 mo	24	8
ICD	23	14 over 60 mo	70	23

Dapagliflozin ~ $550/month
Empagliflozin ~ $580/month

X 12 months = ~ $6,750 per yr X 63 NNT = _____

That means we have to spend $_____ over the course of 1 year by treating 63 people to prevent 1 death. This is in addition to the cost of ACEi/ARNI + BB + MRA +/- ICD +/- clinic or ER visits for UTIs or yeast infections etc.

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Case 1

- Remainder of the Plan -

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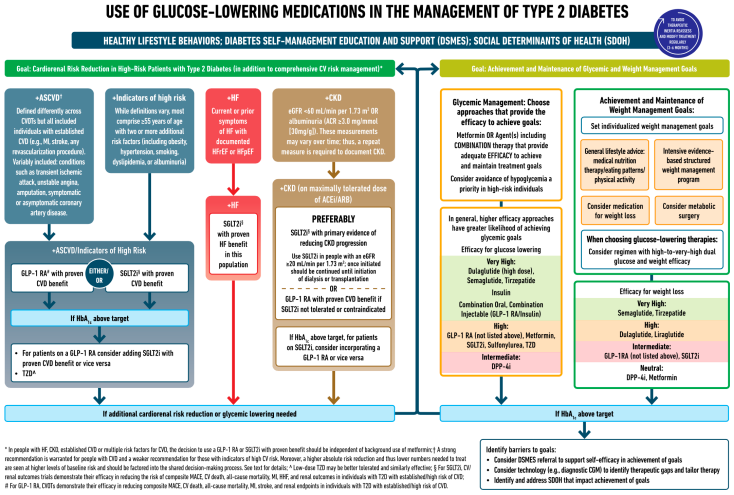

Case 2

- Treatment Considerations:
  - Cost & Access
  - Indications & comorbidities present
  - Continue cost-effective options
  - SGLT2 inhibitors
    - When to avoid?
  - GLP1 agonists; if so, which ones?
  - What about DPP4 Inhibitors (our patient has HF)?
  - What about insulin?

HIGH-YIELD MED REVIEWS

Mental Break

- We all need one -

Integrated Case-Reviews

- CVD & DM Impact on Mental Health -

HIGH-YIELD MED REVIEWS

HIGH-YIELD MED REVIEWS

Case 1 Continued

- Mental Health with Chronic Medical Problems
  - Not only can chronic medical conditions increase the risk of mental disorders, untreated/controlled mental disorders can worsen chronic medical conditions.
  - Mental health considerations:
    - Stress
    - _____
    - _____

CDC Review on Diabetes and Mental Health 2023.

Case 1 Continued

- Mental Health with Chronic Medical Problems
  - Up to _____ of heart failure patients suffer from depression, especially women
    - A national cohort study of 154,572 patients published in 2022 showed that the risk of depression and suicide is greatest in the first 3 months in both men and women
  - According to the CDC, diabetics _____ x more likely to develop depression
    - Only _____ get actual treatment

JACC Heart Fail 2022;10(11):819-827.
CDC Review on Diabetes and Mental Health 2023.

Integrated Case-Reviews

- Case 2 -

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Case 2

- 40 yr male with PMH of schizophrenia for the past 10 years, HTN, and drug abuse (marijuana) who comes into the clinic with his wife who reports he is having some worsening auditory hallucinations but no VH, SI, or HI.
- He currently smokes 1.5 ppd
- He has been intermittently compliant with his risperidone 2 mg po BID

Case 2

- VS:
  - Afebrile, P = 75, BP = 145/88
  - Wt = 185; Ht = 68 inches → Overweight
- Labs:
  - CBC = nml
  - CMP = nml except, fasting glucose = 172 mg/dl, AST/ALT = 52/48
  - TSH = 2.3
  - A1C = 7.4%
  - Lipid profile:
    - TC = 224, HDL = 34, TG = 213, LDL = 147

Integrated Case-Reviews

- Options to Improve Compliance -

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Depot Antipsychotics

Generic Name	Brand Name	Notes
First Generation or Typical Agents		
Fluphenazine decanoate	Prolixin	▪ IM every 2 weeks
Haloperidol decanoate	Haldol	▪ IM every 4 weeks
Second Generation or Atypical Agents		
Aripiprazole lauroxil	Aristada	▪ IM every 4 weeks ▪ 1064 mg IM every 2 months
Olanzapine pamoate	Zyprexa Relprevv	▪ IM every 2 or 4 weeks ▪ REMS program access
Paliperidone	Invega Sustenna	▪ IM every 4 weeks
Risperidone	Risperdal Consta	▪ Microsphere formulation ▪ Requires reconstitution ▪ Must be used within 6 hrs

HIGH-YIELD MED REVIEWS

Other Antipsychotics Formulations

Formulation	Notes
First Generation or Typical Agents	
ODT	▪ None
Inhalation	▪ Loxapine (Adasuve)
Second Generation or Atypical Agents	
ODT	▪ Aripiprazole (Abilify Discmelt) ▪ Clozapine (Fazaclo) ▪ Olanzapine (Zydis) ▪ Risperidone (Risperidone MTab)
Inhalation	▪ None
Oral Suspension **	▪ Clozapine (Versacloz)

HIGH-YIELD MED REVIEWS

Case 2

- You present to him the idea of using Risperdal Consta, but he is hesitant.
- After further discussion, you gain insight into his intermittent non-compliance
- He reports not liking the side effects, which includes a weight gain of 25 lbs over the past 2 years.
- He wants to try to avoid starting more medications.

Integrated Case-Reviews

- Common Side Effects -

HIGH-YIELD MED REVIEWS

Antipsychotic Side Effects

Adverse Drug Effect	Notes
Acutely Concerning	
NMS	▪ Levenson's, Pope, Lazarus, DSM -5 criteria (all share similar criteria) ▪ AMS, hyperthermia, elevated CPK, muscle rigidity
Dystonic Reactions	▪ Diaphragm * → life threatening ▪ Eye (oculogyric crisis) ▪ Neck → Torticolis ▪ Rx: IM Diphenhydramine or Benztropine
QT Prolongation	▪ All agents, ziprasidone historically
Seizures	▪ Mainly clozapine

HIGH-YIELD MED REVIEWS

Antipsychotic Side Effects

Adverse Drug Effect	Notes
Chronic in Nature	
Weight gain	_____ = _____ > risperidone, quetiapine, > ziprasidone = _____
HTN	Part of the metabolic syndrome
Hyperglycemia	Both IFG and DM, cases of DKA
Akathisia	▪ "Coming out of skin" ▪ _____ , brexpiprazole, cariprazine
Hyperprolactinemia	▪ F: Amenorrhea, leaking breast ▪ M: Sexual dysfunction, impotence
Tardive Dyskinesia	▪ Typicals, high dose risperidone & paliperidone ▪ Rx → Valbenazine (Ingrezza), a highly selective VAMT2 Inhibitor

Case 2

- Treatment Plan:
  - Lifestyle changes – referral to a dietician
  - He had a brother that had good success with aripiprazole and was started on that
  - Offered metformin
  - Close follow up with re-evaluation of:
    - Schizophrenia
    - Blood pressure
    - A1C and lipid profile

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Live Q&A

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