1 PATIENT INFORMATION

1 PATIENT DETAILS

NAME
Harold T. Meskin

DOB
11/02/1954

AGE / SEX
71 yrs / Male

MRN / PATIENT ID
2207641

DATE OF SERVICE
08/05/2026

PROVIDER
Devon Arinze, MD

CREDENTIALS
MD, FHRS

REFERRAL SOURCE
Emergency department, Lakeview Memorial — urgent EP referral

VISIT TYPE
Urgent Device Check — post-shock evaluation and ablation planning

CARE SETTING
Outpatient Device Clinic — same-day add-on

PRIMARY CARE PROVIDER
Anita Okonjo, MD

PRIMARY CARDIOLOGIST
Raymond Feld, MD

CC CHIEF COMPLAINT

2 PRIMARY ELECTROPHYSIOLOGY CONCERN

"My defibrillator has gone off three times since Sunday. The first one knocked me to my knees in the driveway. I'm afraid to be alone in the house now and my wife hasn't slept."

S SUBJECTIVE

3 PATIENT-REPORTED RHYTHM SYMPTOMS, ARRHYTHMIA & DEVICE HISTORY

3a INDICATION & RHYTHM SYMPTOMS

Reason for Electrophysiology Evaluation

Urgent evaluation of three appropriate ICD shocks over a 48-hour window (08/02–08/04/2026) for monomorphic ventricular tachycardia in the setting of ischemic cardiomyopathy. Visit purpose: device interrogation and stored electrogram review, antiarrhythmic optimization, exclusion of reversible triggers, ICD reprogramming to reduce shock

burden, and consideration of catheter ablation of scar-related VT.

Palpitations / Rhythm Symptoms

Two to three weeks of intermittent “fluttering with a heavy chest” lasting seconds to a minute, occurring at rest and in the early evening, previously self-terminating. On 08/02 at approximately 3:40 PM, while carrying firewood, he experienced abrupt palpitations with lightheadedness for roughly 20 seconds followed by a shock that dropped him to his knees; no loss of consciousness. Two further shocks followed on 08/03 at 9:15 PM and 08/04 at 6:05 AM, the last while asleep, each preceded by only brief palpitations. He reports profound anxiety, hypervigilance about his heartbeat, and has stopped driving voluntarily.

3b ARRHYTHMIA-SPECIFIC HISTORY

Atrial Fibrillation / Atrial Flutter History

Paroxysmal atrial fibrillation diagnosed 2019, low symptomatic burden. Two prior episodes on device data lasting under six hours each in 2024. No prior cardioversion or atrial ablation. Rate-controlled; anticoagulated. Most recent device-detected AF burden under 1%.

SVT / Tachyarrhythmia History

No documented SVT. No prior adenosine administration or SVT ablation. No pre-excitation on prior ECGs.

Ventricular Arrhythmia History

Anterior STEMI in 2011 treated with primary PCI to the LAD, complicated by a large apical infarct. Secondary-prevention considerations led to primary-prevention single-chamber ICD implantation in 2016 for LVEF 28%. First device-detected NSTV episodes in 2023; PVC burden 8–11% on prior interrogations. No prior appropriate therapy until this week — this represents his first ICD shocks in ten years of device therapy. One inappropriate shock in 2019 during rapidly conducted AF, resolved with rate-control adjustment. No family history of sudden cardiac death or inherited arrhythmia syndrome.

Bradycardia / Conduction Symptoms

No symptomatic bradycardia. No documented pauses, AV block, or chronotropic incompetence. Resting heart rate has run 52–58 on beta blockade without dizziness or fatigue.

Syncope / Presyncope History

No syncope. Presyncope confined to the 10–20 seconds preceding each of the three shocks: lightheadedness and grey vision without prodromal nausea or diaphoresis, no post-event confusion, no seizure activity, no injury sustained beyond a bruised right knee on 08/02.

3c DEVICE, PROCEDURE & MEDICATION HISTORY

Device History

Medtronic Visia AF single-chamber ICD, implanted 09/2016, left prepectoral, for primary prevention with LVEF 28%. Single RV defibrillation lead (Sprint Quattro Secure, 2016), no lead revisions, no prior device infection. Generator change not yet performed. Enrolled in CareLink remote monitoring; his 08/03 transmission triggered the red alert that prompted this referral. Prior interrogations unremarkable with stable lead parameters.

Post-Procedure Course

No recent invasive procedure. Device pocket has been quiescent since implantation. No recent cardioversion, ablation, lead revision, or generator change.

Medication History and Treatment Response

Metoprolol succinate 50 mg daily (uptitrated from 25 mg on 08/03 by the ED), sacubitril-valsartan 49/51 mg twice daily, spironolactone 25 mg daily, dapagliflozin 10 mg daily, furosemide 40 mg daily, apixaban 5 mg twice daily, atorvastatin 40 mg nightly, aspirin 81 mg daily. Amiodarone was not previously prescribed. Adherence verified against the pharmacy fill history — no gaps. He admits he doubled his furosemide for four days in late July after weight gain following a holiday weekend, then stopped it entirely for two days because of urinary frequency. No QT-prolonging medications. No affordability barriers.

Anticoagulation / Stroke Risk History

Apixaban 5 mg twice daily for paroxysmal AF; CHA_2DS_2-VASc 5 (CHF, hypertension, age 71, diabetes, vascular disease). No prior stroke or TIA. No bleeding events, no falls in the last year. Creatinine clearance supports full dosing. Adherent by report and by fill history.

3d MEDICAL HISTORY, TRIGGERS & INTERVAL EVENTS

Cardiac and Medical History

Ischemic cardiomyopathy with LVEF 28–30%, anterior STEMI 2011 with LAD PCI, three-vessel CAD with subsequent CABG in 2014 (LIMA-LAD, SVG-OM, SVG-PDA), NYHA class II–III heart failure, paroxysmal atrial fibrillation, type 2 diabetes, hypertension, CKD stage 3b with baseline creatinine 1.62, moderate obstructive sleep apnea diagnosed 2021, and hypothyroidism on levothyroxine 75 mcg. No congenital or valvular disease of significance.

Lifestyle and Triggers

Caffeine two cups daily, unchanged. Alcohol: three to four beers over the July 26 holiday weekend, which is above his usual near-abstinence and coincides with the onset of his palpitations. Nonsmoker since 2011. No stimulant or recreational drug use. CPAP adherence poor at roughly two nights per week — reports mask discomfort. Sleep has been fragmented since the first shock.

Recent Testing / Hospitalizations

ED visit 08/02/2026 with discharge the same evening after device interrogation and a normal troponin. Remote transmission 08/03 with red alert. Laboratory panel drawn in the ED. No admission. Last echocardiogram 02/2026, last device clinic visit 04/2026.

Pertinent Negatives

Denies chest pain of ischemic quality, resting dyspnea, orthopnea, PND, fever, chills, device pocket pain or drainage, focal neurologic symptoms, bleeding, melena, or syncope with loss of consciousness. Denies missed doses of apixaban or beta blocker.

ROS ELECTROPHYSIOLOGY REVIEW OF SYSTEMS

4 PERTINENT POSITIVES & NEGATIVES

Palpitations, skipped beats, racing heartbeat, or irregular rhythm	**Positive — intermittent for 2–3 weeks, brief runs preceding each shock.**
Dizziness, presyncope, syncope, or falls	**Positive — presyncope preceding all three shocks. No syncope. One fall to knees 08/02.**
Chest pain, dyspnea, fatigue, exercise intolerance, or diaphoresis	**Positive — fatigue and NYHA II–III exertional dyspnea at baseline. No ischemic chest pain.**
ICD shocks, device alerts, device vibration / beeping, or remote monitoring issues	**Positive — three appropriate shocks 08/02–08/04; CareLink red alert 08/03.**
Bradycardia symptoms or tachyarrhythmia symptoms	**Tachyarrhythmia symptoms positive. No bradycardia symptoms at HR 52–58.**
Bleeding, bruising, anticoagulation issues, or medication side effects	**Negative — no bleeding on apixaban. Self-adjusted diuretic in late July.**
Device pocket pain, swelling, erythema, drainage, or fever	**Negative.**
Sleep apnea symptoms, stimulant use, alcohol use, caffeine use, or dehydration triggers	**Positive — poor CPAP adherence, alcohol excess 07/26, and diuretic misuse with likely volume and electrolyte shift.**

O OBJECTIVE

5 OBSERVED FINDINGS

V VITALS

TEMPERATURE
36.5 °C

BLOOD PRESSURE
104/62 mmHg

HEART RATE
56 bpm, regular

RESPIRATORY RATE
18 /min

OXYGEN SATURATION
95% on room air

WEIGHT
88.1 kg (up 1.4 kg from 04/2026)

BMI
29.2 kg/m²

ORTHOSTATIC VITALS
104/62 supine to 96/58 standing, HR 56 to 64 — mildly positive

5a GENERAL, CARDIOVASCULAR & PULMONARY

General Appearance

Alert, visibly anxious, tremulous when describing the shocks. Accompanied by his wife. No respiratory distress at rest; speaks in full sentences. Mildly deconditioned appearance.

Cardiovascular

Rate 56 and regular. S1 and S2 normal with an audible S3 at the apex. Soft 2/6 holosystolic murmur at the apex consistent with functional MR. JVP 8 cm H_2O. Radial pulses 2+ and regular. Capillary refill under 3 seconds. Trace bilateral ankle edema. No hypoperfusion.

Pulmonary

Fine bibasilar crackles that do not clear with cough. No wheeze. Mild increase in work of breathing on lying flat. No oxygen requirement at rest.

5b EXTREMITIES, SKIN & NEUROLOGIC

Extremities / Vascular

Trace pedal edema bilaterally. Pulses 2+ throughout. No femoral or radial access-site findings. No hematoma or bruising. Extremities warm.

Skin

Left prepectoral device pocket well healed with a mature 2016 scar; no tenderness, erythema, warmth, swelling, fluctuance, erosion, or drainage. Sternotomy scar from 2014 CABG intact. No rash. Resolving ecchymosis over the right patella from the 08/02 fall.

Neurologic

Alert and oriented × 3. Cranial nerves intact. No focal motor or sensory deficit. Gait cautious but steady, no ataxia. No post-ictal features and no tongue biting reported.

DS DEVICE / PROCEDURE SITE EXAMINATION

6 DEVICE POCKET & ACCESS SITE

DEVICE TYPE AND LOCATION

Single-chamber ICD, left prepectoral, implanted 09/2016

INCISION HEALING STATUS

Mature, fully healed, no dehiscence

LOOP RECORDER SITE FINDINGS

Not applicable — no loop recorder

ACCESS SITE FINDINGS AFTER ABLATION OR EP STUDY

Not applicable — no recent invasive procedure

Pocket tenderness, swelling, erythema, warmth, drainage, erosion, or dehiscence

None. Pocket soft and non-tender with the generator mobile within the pocket and no skin thinning or impending erosion.

Bruising, hematoma, bleeding, bruit, pseudoaneurysm concern, or distal perfusion

None. Left arm perfusion and range of motion normal, no venous collaterals to suggest subclavian occlusion.

Signs of infection, lead erosion, or post-procedure complication

None identified.

DI DEVICE INTERROGATION / RHYTHM DATA

7 DEVICE & RHYTHM FINDINGS — INTERROGATION 08/05/2026

DEVICE TYPE, MANUFACTURER, AND INDICATION

Medtronic Visia AF single-chamber ICD — primary prevention, ischemic cardiomyopathy

BATTERY STATUS / ESTIMATED LONGEVITY

ERI not reached; estimated 2.1 years remaining (reduced by recent charge cycles)

LEAD PARAMETERS

RV impedance 462 Ω; R-wave 11.4 mV; capture threshold 0.75 V at 0.4 ms; HV impedance 54 Ω — all stable

ATRIAL PACING PERCENTAGE

Not applicable — single-chamber device

VENTRICULAR PACING PERCENTAGE

1.2%

BIVENTRICULAR PACING PERCENTAGE

Not applicable

MODE SWITCHES

Not applicable

ATRIAL FIBRILLATION / FLUTTER BURDEN

0.6% by AF detection algorithm over 120 days

PVC BURDEN OR VENTRICULAR ECTOPY

14% (up from 9% in 04/2026); 41 NSVT episodes in 30 days

REMOTE MONITORING STATUS

CareLink active; red alert transmitted 08/03/2026 at 21:41

DEVICE ALERTS

Two VT therapy alerts and one VF-zone alert; no lead integrity or noise alerts

Arrhythmia episodes detected

Six sustained ventricular tachycardia episodes in the VT zone over 48 hours, cycle length 320–340 ms (176–188 bpm), all monomorphic with a stable, identical near-field electrogram morphology distinct from sinus. Three terminated with anti-tachycardia pacing. Forty-one NSVT runs of 4–12 beats. No VF-zone episodes with true fibrillatory morphology; the single VF-zone detection was a fast VT at cycle length 292 ms.

ICD therapies delivered

Three appropriate 35 J shocks — 08/02 at 15:42, 08/03 at 21:14, and 08/04 at 06:03 — each following one or two failed ATP sequences. Twelve ATP bursts delivered overall, of which nine were successful. All therapies were appropriate for monomorphic VT; no inappropriate therapy for AF, sinus tachycardia, noise, or T-wave oversensing on electrogram review.

Programming changes made today

VT detection zone raised from 171 bpm to 188 bpm with the number of intervals to detect extended from 16 to 30, adding a second ATP burst before charging in both zones. VF zone set at 250 bpm with 30/40 detection. SVT discriminators enabled and confirmed. Long detection intervals were chosen to allow both self-termination and ATP a fuller opportunity before shock delivery.

Symptom-rhythm correlation

Excellent. Each of the three patient-reported shock events maps precisely to a stored VT episode with matching timestamps, and the described 10–20 seconds of palpitations and lightheadedness corresponds to the detection interval preceding therapy.

L ELECTROPHYSIOLOGY TESTING / DIAGNOSTIC RESULTS

8 RESULTS REVIEWED OR ORDERED

EKG — 08/05/2026

Sinus bradycardia at 56 bpm. PR 186 ms, QRS 148 ms with left bundle branch block morphology, QTc 472 ms. Q waves V1–V4 consistent with a prior anterior infarct. Frequent monomorphic PVCs with a right bundle branch block, inferior-axis morphology suggesting a left ventricular apical or septal exit site. No acute ischemic change compared with 02/2026.

Rhythm Monitoring

No external monitor in place — device serves as the continuous monitor. Device data as documented above.

Device Interrogation

As documented in section 7 — stable lead parameters, six sustained monomorphic VT episodes, three appropriate shocks, PVC burden rising from 9% to 14%.

Echocardiogram — 02/2026

LVEF 28% by biplane Simpson. Severe apical and anteroseptal akinesis with an apical aneurysm measuring 3.4 cm. LV end-diastolic dimension 6.2 cm. Moderate functional mitral regurgitation. Grade II diastolic dysfunction. Estimated PASP 44 mmHg. No LV thrombus visualized on contrast imaging. Repeat study ordered today.

Stress Testing / Ischemia Evaluation

Nuclear perfusion imaging 03/2025 showed a large fixed anteroapical defect without reversible ischemia. Given the absence of anginal symptoms and a normal ED troponin on 08/02, acute ischemia is an unlikely trigger; coronary evaluation deferred pending cardiac MRI.

Cardiac MRI / CT

Cardiac MRI with late gadolinium enhancement ordered today for scar characterization and pre-ablation planning. Prior MRI 2017 demonstrated transmural anteroapical enhancement with a border zone extending into the mid septum — a substrate consistent with the current VT morphology.

EP Study / Ablation Reports

No prior EP study or ventricular ablation. Substrate-based VT ablation is being planned; the identical monomorphic electrogram morphology across all six episodes indicates a single dominant re-entrant circuit, which is a favourable feature for ablation.

Laboratory Studies — 08/02 and 08/05/2026

Potassium 3.2 mmol/L on 08/02, repleted to 4.0 on 08/05. Magnesium 1.5 mg/dL on 08/02, now 2.1 after repletion. Creatinine 1.74 mg/dL (baseline 1.62), eGFR 38. Sodium 136. TSH 3.1 with free T4 normal. Hemoglobin 12.6, platelets 198. High-sensitivity troponin T 18 ng/L, flat on serial testing. NT-proBNP 2,840 pg/mL (from 1,410 in 04/2026). Baseline liver function, pulmonary function, and thyroid panel obtained today for amiodarone initiation.

Prior Records Reviewed

ED record and discharge instructions 08/02/2026, CareLink transmission and stored electrograms from 08/03, device clinic notes 04/2026, echocardiogram 02/2026, nuclear study 03/2025, operative report from the 2014 CABG, and pharmacy fill history. Approximately 14 minutes of independent record and electrogram review.

A ASSESSMENT

9 ELECTROPHYSIOLOGY CLINICAL INTERPRETATION

- **Electrical storm — three appropriate ICD shocks for scar-related monomorphic ventricular tachycardia in 48 hours.** Six sustained VT episodes at cycle length 320–340 ms with a single stable electrogram morphology, indicating one dominant re-entrant circuit arising from the anteroapical infarct border zone. This meets the definition of electrical storm and carries a substantially elevated near-term mortality risk.
- **All therapies were appropriate.** Electrogram review excludes inappropriate shocks from AF, sinus tachycardia, lead noise, or T-wave oversensing. Lead parameters are stable and lead integrity is intact.
- **Reversible contributors identified and addressed.** Hypokalemia at 3.2 mmol/L and hypomagnesemia at 1.5 mg/dL on 08/02 — almost certainly precipitated by his self-directed doubling and then abrupt cessation of furosemide in late July — together with an alcohol binge on 07/26 and poor CPAP adherence, form a coherent trigger cluster. Both electrolytes are now corrected.
- **Decompensating ischemic cardiomyopathy.** NT-proBNP has doubled since April, JVP is 8 cm, there are bibasilar crackles, a 1.4 kg weight gain, and an S3. Volume overload both provokes arrhythmia and complicates it. LVEF 28% with a 3.4 cm apical aneurysm.
- **No evidence of acute ischemia.** Flat serial troponin, no anginal symptoms, and a prior fixed perfusion defect without reversibility. Ischemia is not the driver of this storm.
- **Worsening ventricular ectopy burden** from 9% to 14% over four months, consistent with progressive substrate maturation rather than an acute insult.
- **Paroxysmal AF with CHA_2DS_2-VASc 5 — adequately anticoagulated** on apixaban with burden under 1%. This does not alter the current management, but periprocedural anticoagulation planning is required for ablation.
- **CKD stage 3b with a creatinine rise to 1.74**, likely cardiorenal in origin. This constrains contrast exposure at ablation and requires careful diuretic titration.
- **Significant psychological morbidity.** Shock-related anxiety, hypervigilance, sleep disruption, and voluntary driving cessation. This is a treatment target in its own right, not an incidental finding.
- **Disposition:** shock burden is intolerable and recurrence risk is high. Antiarrhythmic loading with device reprogramming now, and catheter ablation of the scar-related VT circuit within two weeks.

P PLAN

10 ELECTROPHYSIOLOGY MANAGEMENT BY PROBLEM

- **Antiarrhythmic therapy:** initiate amiodarone today with an oral load of 400 mg three times daily for 7 days, then 400 mg daily for 14 days, then a 200 mg daily maintenance dose. Baseline TSH, free T4, LFTs, chest radiograph, and pulmonary function testing obtained today. Counselled on photosensitivity, thyroid and hepatic monitoring at 3 months, and pulmonary symptom reporting. Reduce apixaban interaction risk reviewed — dose maintained at 5 mg twice daily with instruction to report any bleeding.

- **Beta blockade:** continue metoprolol succinate 50 mg daily. Do not uptitrate further given systolic BP 104 and a mildly positive orthostatic response.
- **Device reprogramming (completed today):** VT zone raised to 188 bpm with 30-interval detection, two ATP bursts before charging in each zone, VF zone at 250 bpm with 30/40 detection, and SVT discriminators confirmed active. These changes are expected to convert a substantial fraction of future episodes to painless ATP termination or self-termination.
- **Catheter ablation:** scheduled for 08/17/2026 — substrate-based endocardial VT ablation with electroanatomic mapping of the anteroapical border zone. Risks, benefits, and alternatives discussed in detail including vascular injury, tamponade, stroke, and the roughly 20–30% one-year recurrence rate. Pre-procedure cardiac MRI with LGE and repeat transthoracic echocardiogram with contrast to exclude LV thrombus ordered today. General anesthesia planned. Apixaban to be held for 48 hours preoperatively given eGFR 38.
- **Electrolyte and volume management:** potassium target above 4.0 and magnesium above 2.0 — BMP and magnesium in 5 days and again the day before ablation. Resume furosemide 40 mg daily at a fixed dose with strict instruction never to self-adjust; daily weights with a written action plan to call for a 2 kg gain over three days. Repeat BMP in 5 days to reassess renal function on diuresis.
- **Heart failure therapy:** continue sacubitril-valsartan 49/51 mg twice daily, spironolactone 25 mg daily, and dapagliflozin 10 mg daily. No uptitration today given hypotension and the creatinine rise. Referral to the advanced heart failure clinic placed for post-ablation reassessment and consideration of CRT upgrade given LBBB with QRS 148 ms.
- **Anticoagulation:** continue apixaban 5 mg twice daily. Written periprocedural hold instructions provided.
- **Trigger management:** complete alcohol abstinence advised. Sleep medicine referral placed for CPAP mask refitting and adherence support. Caffeine limited to one cup daily.
- **Psychological support:** referral to the cardiac psychology service for shock-related anxiety, with an interim prescription for short-term sleep support declined by the patient. His wife trained in the response to a witnessed shock and instructed to call 911 for two or more shocks in 24 hours, any shock with loss of consciousness, or any shock followed by ongoing symptoms.
- **Driving:** instructed not to drive until three months free of any ICD therapy, in accordance with state law and HRS consensus. Documented and provided in writing.
- **Coordination:** note routed to Dr. Feld (primary cardiology), Dr. Okonjo (primary care), and the advanced heart failure and sleep medicine services. Device clinic notified of the reprogramming and of daily CareLink alert review through 08/17.
- **Patient education:** 22 minutes spent on shock recognition and response, amiodarone side effects and monitoring, the ablation procedure and its expectations, diuretic discipline, driving restrictions, and warning signs requiring emergency care.

F FOLLOW-UP

11 REASSESSMENT PLAN

Follow-up timeframe and purpose

Daily CareLink remote transmission review through the ablation date, with the device clinic instructed to escalate any VT episode or therapy immediately. Telephone check by the EP nurse in 3 days for amiodarone tolerance and shock recurrence. Laboratory: BMP and magnesium in 5 days and again on 08/16. Cardiac MRI and contrast echocardiogram before 08/14. Catheter ablation 08/17/2026. In-person EP follow-up with full interrogation 2 weeks post-ablation, then at 3 months with amiodarone monitoring labs, thyroid and hepatic panels, and a driving-eligibility review. Immediate return precautions given for any further shock, syncope, or new heart failure symptoms.

TB TIME DOCUMENTATION & BILLING

TOTAL TIME SPENT
62 minutes

COUNSELING / COORDINATION OF CARE TIME
22 minutes

RECORDS REVIEW TIME
14 minutes

DEVICE INTERROGATION REVIEW TIME
16 minutes

PROCEDURE PLANNING TIME
10 minutes — VT ablation scheduling and pre-procedure workup

BASIS FOR BILLING
Medical Decision Making (high complexity)

E/M LEVEL
99215 — established patient, high MDM, with 25 modifier

DEVICE INTERROGATION CODE(S)
93289 — ICD in-person interrogation with evaluation and programming

PROCEDURE CODE(S)
None performed this visit; 93654 planned 08/17/2026

DIAGNOSTIC TEST INTERPRETATION CODE(S)
93010 — EKG interpretation and report

PRIMARY ICD-10 DIAGNOSIS CODE
I47.20 — Ventricular tachycardia, unspecified

SECONDARY ICD-10 DIAGNOSIS CODE(S)
I25.5 — Ischemic cardiomyopathy; I50.22 — Chronic systolic heart failure; Z95.810 — Presence of automatic implantable cardiac defibrillator; I48.0 — Paroxysmal atrial fibrillation; E87.6 — Hypokalemia; E83.42 — Hypomagnesemia; N18.32 — CKD stage 3b; I25.2 — Old myocardial infarction; G47.33 — Obstructive sleep apnea; F41.9 — Anxiety disorder, unspecified

SO PROVIDER SIGN-OFF

PROVIDER NAME	CREDENTIALS	SPECIALTY	DATE	TIME
Devon Arinze, MD	MD, FHRS	Cardiac Electrophysiology	08/05/2026	2:18 PM