FIGURE 2: Diagnosis

Signs/symptoms of AOH, particularly poor morning erection, low sexual desire, erectile dysfunction (Wu et al., 2010); other possible symptoms include reduced muscle mass, increased body fat, fatigue, decreased concentration/memory, osteopenia/porosis, gynecomastia, reduced sexual hair, hot flashes; NOTE: delay work-up if patient recovering from acute/subacute illness

History, physical examination, and morning total testosterone (TT; by reliable assay)

Low or borderline low T (e.g., T< 280-300 ng/dl or lower limit in reference laboratory)

Exclude drug effects, other known causes of low T; Repeat morning TT (by reliable assay) + LH/FSH, SHBG; if SHBG abnormality suspected or T is borderline low, then measure free T or bioavailable T

Confirmed low T (total T, free T or bioavailable T as appropriate)

Low T w/ low or normal LH+FSH = AOH; exclude TRT contraindications (e.g., elevated Hct, breast Ca, severe sleep apnea, severe cardiac failure); begin TRT w/ lifestyle modifications; Investigate for T2DM, HL, NAFLD; manage if present

High LH+FSH, normal PRL = primary hypogonadism

Exclude contraindications for TRT (e.g., elevated hematocrit, breast Ca, severe sleep apnea, severe cardiac failure)

TRT w/ lifestyle modifications and comorbidity management

Successful; monitor TT, FBC

Failure; review diagnosis

No identifiable cause; exclude TRT contraindications

Identified cause; exclude TRT contraindications

TRT with lifestyle modifications and comorbidity management

Manage or refer

Normal Hx and physical exam; Normal T (T>280-300 ng/dl)

No AOH; seek other causes

Investigate pituitary + other causes (e.g., iron studies, other AP hormones; MRI if symptoms of mass effect or TT<150 ng/dl)

Low/normal LH+FSH; elevated PRL

Identified cause; exclude TRT contraindications (e.g., elevated hematocrit, breast Ca, severe sleep apnea, severe cardiac failure)

Successful; monitor TT, FBC

Failure; review diagnosis

TRT with lifestyle modifications and comorbidity management

Manage or refer

NOTE: delay work-up if patient recovering from acute/subacute illness

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1 The full text of the white paper will be made available on www.smsna.org.
FIGURE 3: Treatment and Follow-Up
(adapted from Bhasin et al., 2010)

Man with AOH signs/symptoms AND repeatedly low TT AND documented LH+FSH values; contraindications to TRT excluded; lifestyle modifications discussed as necessary; presence of comorbidities requiring management evaluated

Desire to maintain fertility

No desire to maintain fertility

Stimulation of endogenous T secretion (if LH not elevated); SERM or hCG

TRT after discussion regarding risks/benefits of various formulations

Follow-up at 3 and 6 mos, then annually; signs/symptoms, weight, TT, Hct, PSA; at 6 mos; if total T<400 ng/dL and no improvement, then consider dose increase with reassessment in another 3-6 mos;

If hematocrit >54%, then stop TRT until Hct decreases to safe level; evaluate for hypoxia and sleep apnea; reinitiate TRT at reduced dose

Measure BMD of lumbar spine and/or femoral neck after 1-2 y of TRT in men w/ osteoporosis or low trauma fracture

In men aged ≥40 years w/ baseline PSA >0.6 ng/ml, perform DRE and check PSA before TRT, at 3 to 6 mos, and then based on prostate cancer screening guidelines

Evaluate formulation-specific adverse events at each follow-up visit

Not improved after 3-6 mos; consider discontinuation; search for other causes/treatments

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