Whole Body Dual X-Ray Absorptiometry to Determine Body Composition

**Description**

Using low-dose x-rays of two different energy levels, whole-body dual-energy x-ray absorptiometry (DXA) measures lean tissue mass, total and regional body fat, as well as bone density. DXA scans have become a tool for research on body composition (e.g., as a more convenient replacement for underwater weighing). This evidence review addresses potential applications in clinical care rather than research use of the technology.

**OBJECTIVE**

The objective of this evidence review is to determine whether the use of dual-energy x-ray absorptiometry improves the net health outcome in individuals with a condition associated with abnormal body composition.

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POLICY STATEMENT

Dual-energy x-ray absorptiometry body composition studies are considered not medically necessary.

POLICY GUIDELINES

None

BENEFIT APPLICATION

Experimental or investigational procedures, treatments, drugs, or devices are not covered (See General Exclusion Section of brochure).

FDA REGULATORY STATUS

Body composition software for several bone densitometer systems has been approved by the U.S. Food and Drug Administration through the premarket approval process. They include the Lunar iDXA systems (GE Healthcare), Hologic DXA systems (Hologic), and Norland DXA systems (Swissray). Food and Drug Administration product code: KGI.

RATIONALE

Summary of Evidence

For individuals who have a clinical condition associated with abnormal body composition who receive dual-energy x-ray absorptiometry (DXA) body composition studies, the evidence includes systematic reviews and several cross-sectional studies comparing DXA with other techniques. The relevant outcomes are symptoms and change in disease status. The available studies were primarily conducted in research settings and often used DXA body composition studies as a reference standard; these studies do not permit conclusions about the accuracy of DXA for measuring body composition. A systematic review exploring the clinical validity of DXA measurements against reference methods for the quantification of intra-abdominal adipose tissue raised concerns for precision and reliability. More importantly, no studies were identified in which DXA body composition measurements were actively used in patient management. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals who have a clinical condition managed by monitoring changes in body composition over time who receive serial DXA body composition studies, the evidence includes several prospective studies monitoring patients over time. The relevant outcomes are symptoms and change in disease status. The studies used DXA as a tool to measure body composition and were not designed to assess the accuracy of DXA. None of the studies used DXA findings to make patient management decisions or addressed how serial body composition assessment might improve health outcomes. The evidence is insufficient to determine the effects of the technology on health outcomes.
**SUPPLEMENTAL INFORMATION**

**Practice Guidelines and Position Statements**

**International Society for Clinical Densitometry**

The International Society for Clinical Densitometry (2015) updated its statements on the use of dual x-ray absorptiometry (DXA) for body composition. The following statements were made on the use of DXA total body composition with regional analysis:

- To assess fat distribution in patients with HIV who are using antiretroviral agents known to increase the risk of lipodystrophy.
- To assess fat and lean mass changes in obese patients undergoing bariatric surgery (or medical, diet, or weight loss regimens with anticipated large weight loss) when weight loss exceeds approximately 10%. The statement noted that the impact of DXA studies on clinical outcomes in these patients is uncertain.
- To assess fat and lean mass in patients with muscle weakness and poor physical functioning. The impact on clinical outcomes is uncertain.

Of note, pregnancy is a contraindication to use of DXA to measure body composition. The statement also adds that the clinical utility of DXA measurements of adiposity and lean mass (eg, visceral adipose tissue, lean mass index, fat mass index) is uncertain. Furthermore, while the use of DXA adiposity measures such as fat mass index may be useful in risk-stratifying patients for cardio-metabolic outcomes, specific thresholds to define obesity have not been established.

**International Conference on Sarcopenia and Frailty Research Task Force**

Evidence-based clinical practice guidelines for the screening, diagnosis, and management of sarcopenia were developed by the International Conference on Sarcopenia and Frailty Research task force in 2018. The following recommendations were made:

- Screening for sarcopenia can be performed using gait speed analysis or SARC-F questionnaire.
- Individuals screened as positive for sarcopenia should be referred for further assessment to confirm the presence of the disease.
- DXA imaging should be used to determine low levels of lean body mass when diagnosing sarcopenia.

The recommendation regarding the diagnostic use of DXA received a conditional (weak) recommendation. The certainty of the evidence for DXA assessment was ranked low due to:

- DXA studies featuring populations from low-middle income countries are lacking.
- DXA measurement of lean body mass rather than muscle mass may potentially misclassify body composition in certain individuals.
- Incorporation of DXA measurements of lean body mass may have limited additional benefit for the prediction of relevant health outcomes (eg, falls, fractures, lowered physical performance, mobility).

**U.S. Preventive Services Task Force Recommendations**

No U.S. Preventive Services Task Force recommendations for whole-body DXA have been identified.

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Medicare National Coverage

There is no national coverage determination. In the absence of a national coverage determination, coverage decisions are left to the discretion of local Medicare carriers.

REFERENCES


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**POLICY HISTORY - THIS POLICY WAS APPROVED BY THE FEP® PHARMACY AND MEDICAL POLICY COMMITTEE ACCORDING TO THE HISTORY BELOW:**

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<th>Date</th>
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<td>March 2015</td>
<td>Replace policy</td>
<td>Policy updated with literature review. References 1-2, 7-9, 12-13 added. Policy statement unchanged.</td>
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<tr>
<td>December 2018</td>
<td>Replace policy</td>
<td>Policy updated with literature review through July 26, 2018; reference 12 added. Policy statement unchanged.</td>
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<tr>
<td>December 2019</td>
<td>Replace policy</td>
<td>Policy updated with literature review through June 26, 2019; references added. Policy statement unchanged.</td>
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