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| General recommendation | |
| <p>CAYA cancer survivors and their healthcare providers should be aware of the risk of metabolic syndrome^a and possible consequences (e.g. atherosclerotic cardiovascular disease and type II diabetes mellitus) after treatment with:</p> <ul style="list-style-type: none"> • Cranial or craniospinal radiotherapy (moderate-quality evidence) • Total body irradiation (moderate-quality evidence) <p>(strong recommendation)</p> | |
| Who needs surveillance for metabolic syndrome? | |
| <p>Metabolic syndrome^a surveillance is recommended for CAYA cancer survivors treated with cranial or craniospinal radiotherapy or total body irradiation (moderate-quality evidence, strong recommendation).</p> | |
| What surveillance modality should be used? | |
| <p>Measuring height, weight, BMI, waist circumference, fasting blood glucose with or without HbA1c, a fasting lipid profile and blood pressure is recommended for surveillance of metabolic syndrome (existing guidelines, strong recommendation).</p> | |
| When should surveillance for metabolic syndrome be initiated? | |
| Cranial or craniospinal radiotherapy | Total body irradiation |
| <p>For CAYA cancer survivors treated with cranial or craniospinal radiotherapy, measuring BMI/waist circumference and blood pressure is recommended at entry into long-term follow-up^b (expert opinion, strong recommendation).</p> <p>Measurement of fasting blood glucose and a fasting lipid profile beginning no later than the age of 40 years is recommended. Earlier initiation of surveillance should be considered for survivors of any age in whom the presence of individual components has already been diagnosed (expert opinion, strong recommendation).</p> | <p>For CAYA cancer survivors treated with total body irradiation, measuring BMI/waist circumference, blood pressure, fasting blood glucose and fasting lipid profile is recommended at entry into long-term follow-up^b (expert opinion, strong recommendation).</p> |
| At what frequency should surveillance for metabolic syndrome be performed? | |
| Cranial or craniospinal radiotherapy | Total body irradiation |
| <p>For CAYA cancer survivors treated with cranial or craniospinal radiotherapy, measurement of BMI/waist circumference and blood pressure is recommended at least every 2 years and fasting blood glucose and lipid profile at least every 5 years, with consideration of more frequent testing (up to annually) (expert opinion, strong recommendation).</p> | <p>For CAYA cancer survivors treated with total body irradiation, measuring BMI/waist circumference, blood pressure, fasting blood glucose, and fasting lipid profile is recommended at least every 2 years, with consideration of more frequent testing (up to annually) (expert opinion, strong recommendation).</p> |
| What should be done when abnormalities are identified? | |
| <p>In case one or more abnormalities are identified in CAYA cancer survivors at risk for metabolic syndrome:</p> <ul style="list-style-type: none"> • Evaluate for other features of the metabolic syndrome^a (existing guidelines). • Refer to the appropriate healthcare professional for targeted treatment and management of identified abnormalities (existing guidelines). • Consider referral to an endocrinologist for further (endocrine) evaluation and/or | |

management of metabolic syndrome^a (existing guidelines).

- Counsel about healthy lifestyle and discuss potential lifestyle interventions, such as referral to a dietician or lifestyle coach (existing guidelines).

(strong recommendation)

Abbreviations: BMI, body mass index; CAYA, childhood adolescent and young adult; HbA1c, hemoglobin A1c.

Green representing a strong recommendation to do with a low degree of uncertainty.

^a Metabolic syndrome is defined by the NCEP ATP III criteria.

^b Entry into long-term follow-up typically occurs 2-5 years following completion of therapy.

Publication

van den Oever SR, Mulder RL, Oeffinger KC, Gietema JA, Skinner R, Constine LS, Wallace WH, Armenian S, Barnea D, Bardi E, Belle FN, Brown AL, Chemaitilly W, Crowne L, van Dalen EC, Denzer C, Ehrhardt MJ, Felicetti F, Friedman DN, Fulbright J, Glaser AW, Giwercman A, Sangstuen Haugnes H, Hayek S, Hennewig U, van den Heuvel-Eibrink MM, Haupt R, van Iersel L, Kamdar K, Lefrandt J, Levitt G, Morsellino V, Mulrooney DA, Murray RD, Neggers S, Ness KK, Neville KA, Nock NL, Otth M, Prasad PK, van Santen HM, Schindera C, Rath SR, Steinberger J, Terenziani M, Varedi M, Walwyn T, Wei C, Hudson MM, Kremer LCM, Nuver J, Tonorezos E. Metabolic syndrome in childhood, adolescent, and young adult cancer survivors: recommendations for surveillance from the International Late Effects of Childhood Cancer Guideline Harmonization Group. *Eur J Endocrinol.* 2025;192(4):S27-S40.