

Circulating Tumor Cell Count

Indications for Ordering

Prognosticate, assess treatment efficacy, and manage treatment decisions for individuals with metastatic

- Breast cancer (MBC)
- Colorectal cancer (MCRC)
- Prostate cancer (MPC)

Test Description

CellSearch system

- Anti-epithelial cell adhesion molecule (EpCAM) antibodies selectively bind circulating tumor cells (CTCs)
- Fluorescently labeled detection antibodies (CK-PE, DAPI, and APC-CD45) bind CTCs and are detected by microscopy
- FDA approved for quantifying CTCs in whole blood

Tests to Consider

[Circulating Tumor Cell Count 0093399](#)

- Use in metastatic tumors in conjunction with clinical data and imaging to monitor response to therapy and disease progression

Disease Overview

Prognostic/treatment issues

- CTC may be useful for monitoring in MBC, MCRC, MPC
- CTC is an independent predictor of progression-free survival and overall survival
 - Cutoffs vary by tumor cell type
 - MBC – >5 CTCs/7.5 mL of blood
 - MCRC – >3 CTCs/7.5 mL of blood
 - MPC – >5 CTCs/7.5 ml of blood

- CTC may indicate treatment efficacy
 - Baseline CTC should be obtained prior to therapy initiation
 - Serial CTC measurements should be obtained to guide therapy and assess prognosis

Physiology

EpCAM is expressed by MBC, MCRC, and MPC cells

Test Interpretation

Results

- Positive – ≥1 CTC/7.5 mL of blood
 - Cutoff for prognostication is disease specific (see prognosis in disease overview)
- Negative – no CTCs detected

Limitations

- CTC is not as accurate as imaging in assessing whether a individual has progressive disease
- Doxorubicin therapy individuals – allow at least 7 days following administration of a dose before testing
- Not detected
 - CTCs that do not express EpCAM
 - CTCs that express EpCAM but not cytokeratins 8, 18, and 19
- Serial CTCs should be performed in the same laboratory

Overall Individual Median Survival Times Based on CTC			
	MBC	MCRC	MPC
CTC < cutoff for all time points	22.6 months	18.6 months	>26 months
CTC ≥ cutoff for all time points	4.1 months	3.9 months	6.8 months
CTC ≥ cutoff at baseline and CTC < cutoff at final draw	19.8 months	11.7 months	21.3 months
CTC < cutoff at early draw and CTC ≥ cutoff at final draw	10.6 months	7.1 months	9.3 months