

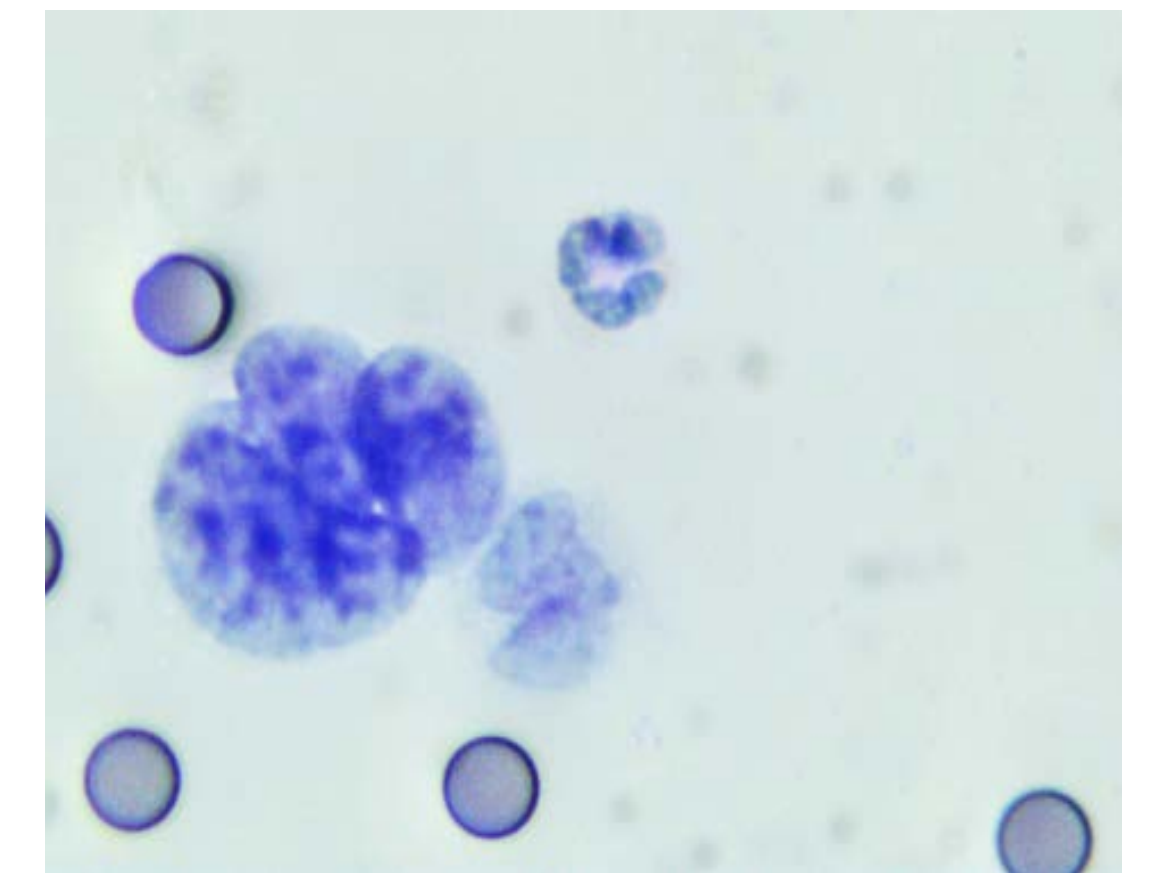
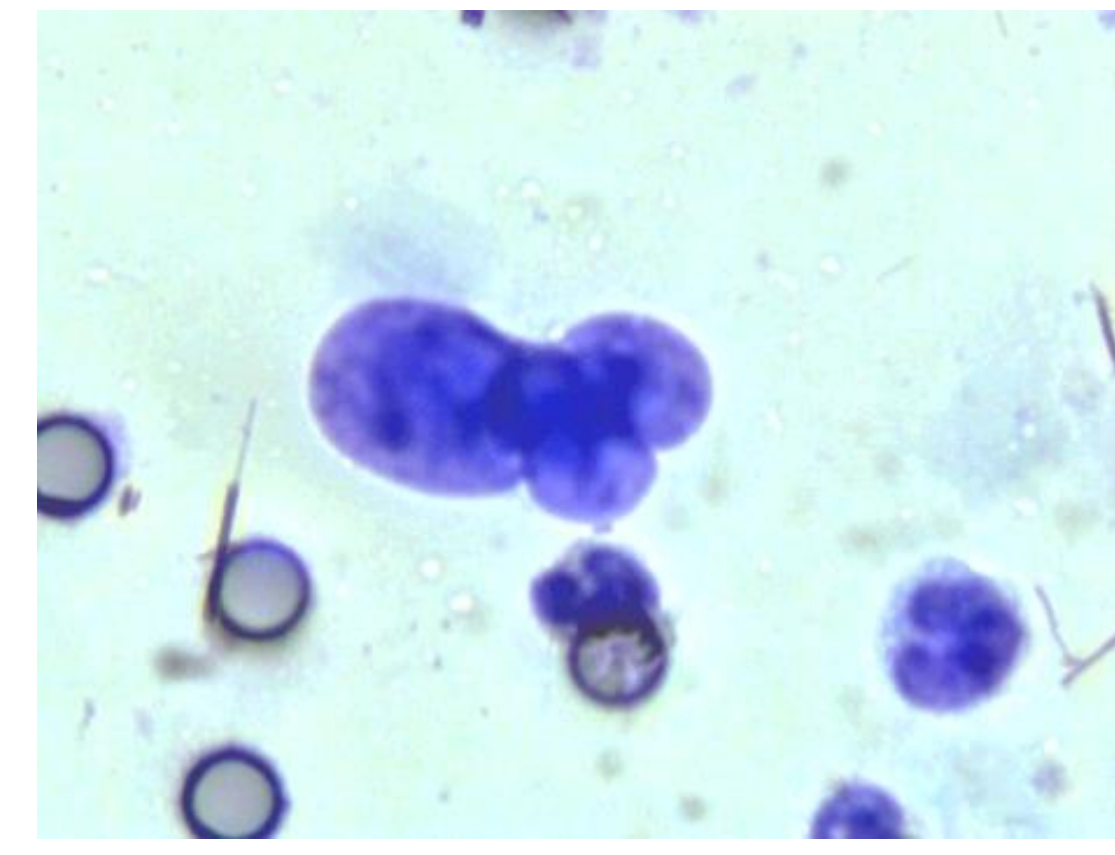
Screening for Circulating Tumour Cells (CTC): Early detection of cancer and monitoring of treatment effectiveness - an observational study of 600 patients¹

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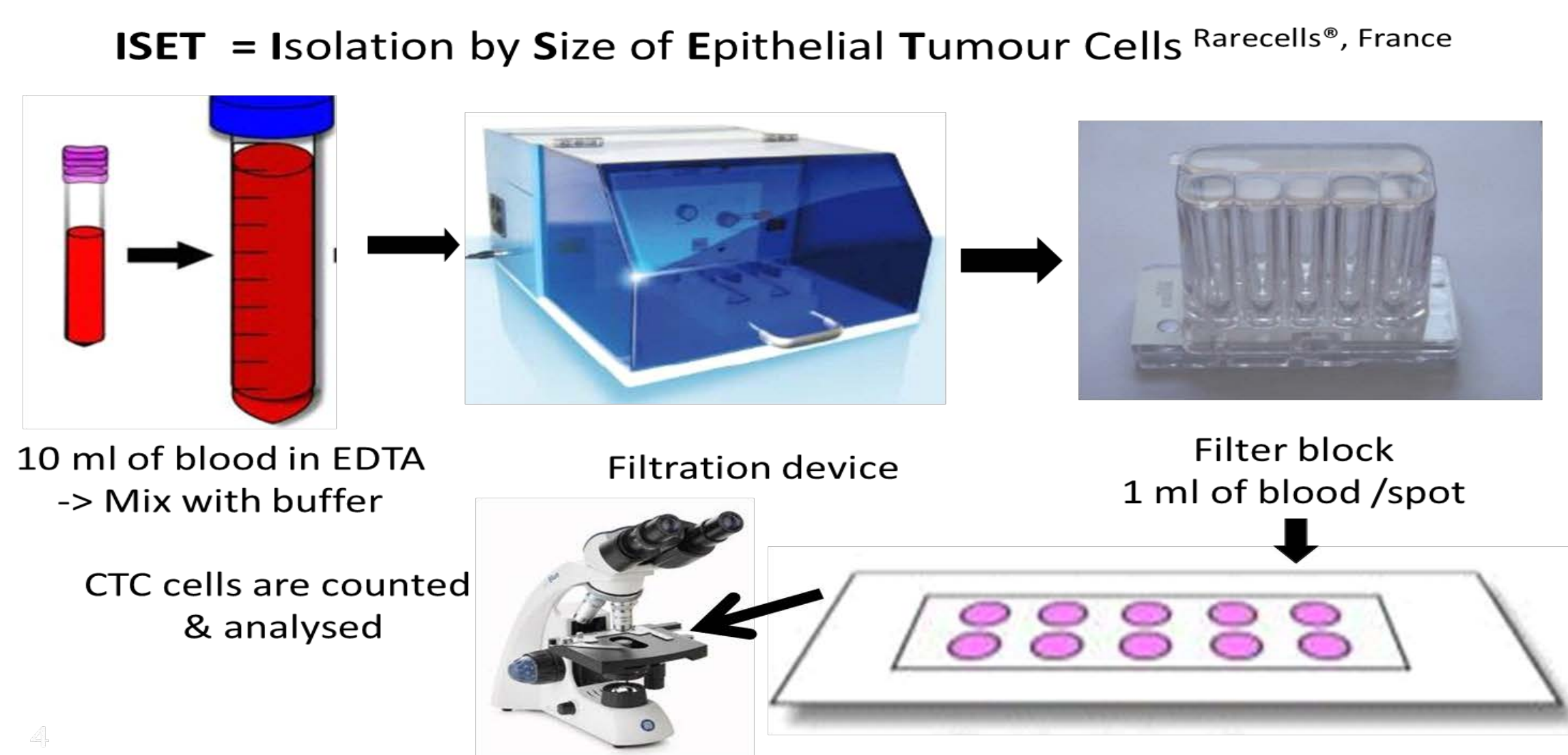
Background

Circulating Tumour Cells (CTC) are biomarkers for

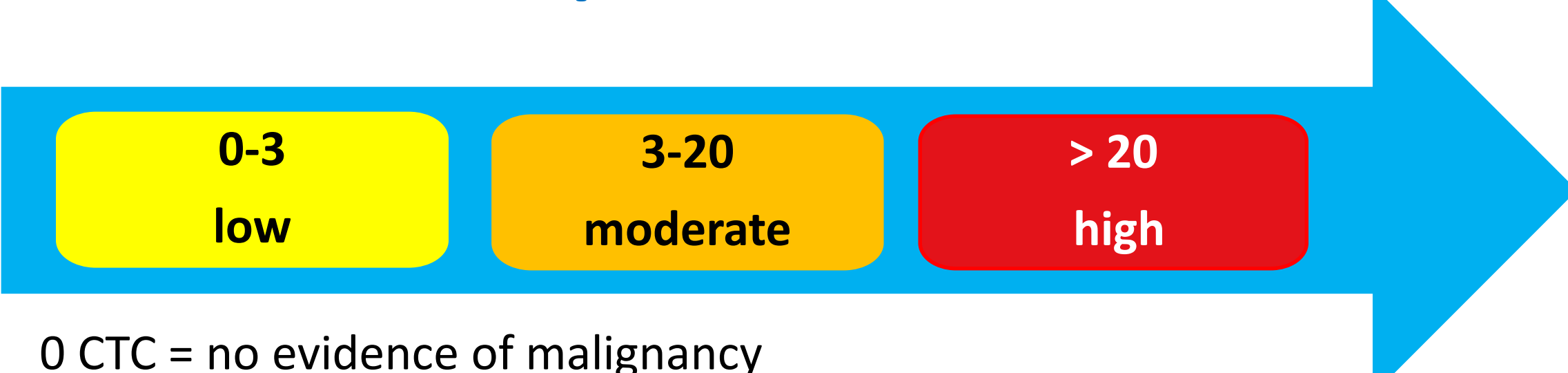
- **early** carcinogenesis / malignant potential²
- cancer **prognosis** and treatment effectiveness^{3,4}
- CTC **increase** is associated with cancer progression and survival³
- CTC **decrease** is associated with cancer containment or remission⁴
- **CTC clusters** are associated with metastatic potential⁵
- Early detection **CTC screening** is suggested for patients with higher risk of malignancy, e.g. smoking, family history, HRT, >50 years
- Several technologies have been developed to identify CTC, including the
 - Isolation by Size of Epithelial Tumour (ISET) using filtration and analysis by microscopy using standard histo-pathological criteria, **validated** in several studies, and provides high **sensitivity** (1 CTC/ml), and high **specificity** (0 CTC/ml in 600 healthy donors)^{6,7}

Methods

Isolation of CTC & analysis



Number of CTC/ml and cancer risk



Some FACTS: The ISET-CTC test can...

- Detect CTC in **ALL cancer types**, solid and blood type cancers
- Detect CTC of **ALL sizes**, including **SMALL** cell cancers
- Detect CTC **independent of EpCAM markers** used in other CTC tests, e.g. CellSearch. Some tumours don't have or lose those markers over time.
- **Distinguish** between **malignant** CTC and **benign** atypical cells, **inflammation**, and **infection**. Some infections can mimic cancer.

Integrative nutritional therapy

- Advice on lifestyle and nutrition
- Boost immune system including Natural Killer cells
- Stimulate anti-carcinogenic activities including cancer cell death
 - Curcumin, Kyolic garlic, Green tea, Mushroom extracts, Vitamin D
 - Nigella sativa, Citrus pectin, Grape seed



References

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Results

- Between Sept-2014 and Dec-2016 we undertook 600 CTC tests
- 50% (n=300) of tests were CTC screening requests
- CTC were detected in **all** cancer patients and in 50% of those screened
- **Follow-up test results** – available in 25% of patients with CTC:
 - **Group 1: Early detection:** Follow-up imaging scans within 1-10 months revealed cancerous lesions in **20%** of asymptomatic patients with positive CTC counts, including early prostate cancer (50% of the males in group 1), breast, ovarian, lung or renal cancer.

Group 1: no tumour before CTC test Early detection CTC screening & follow-up scan

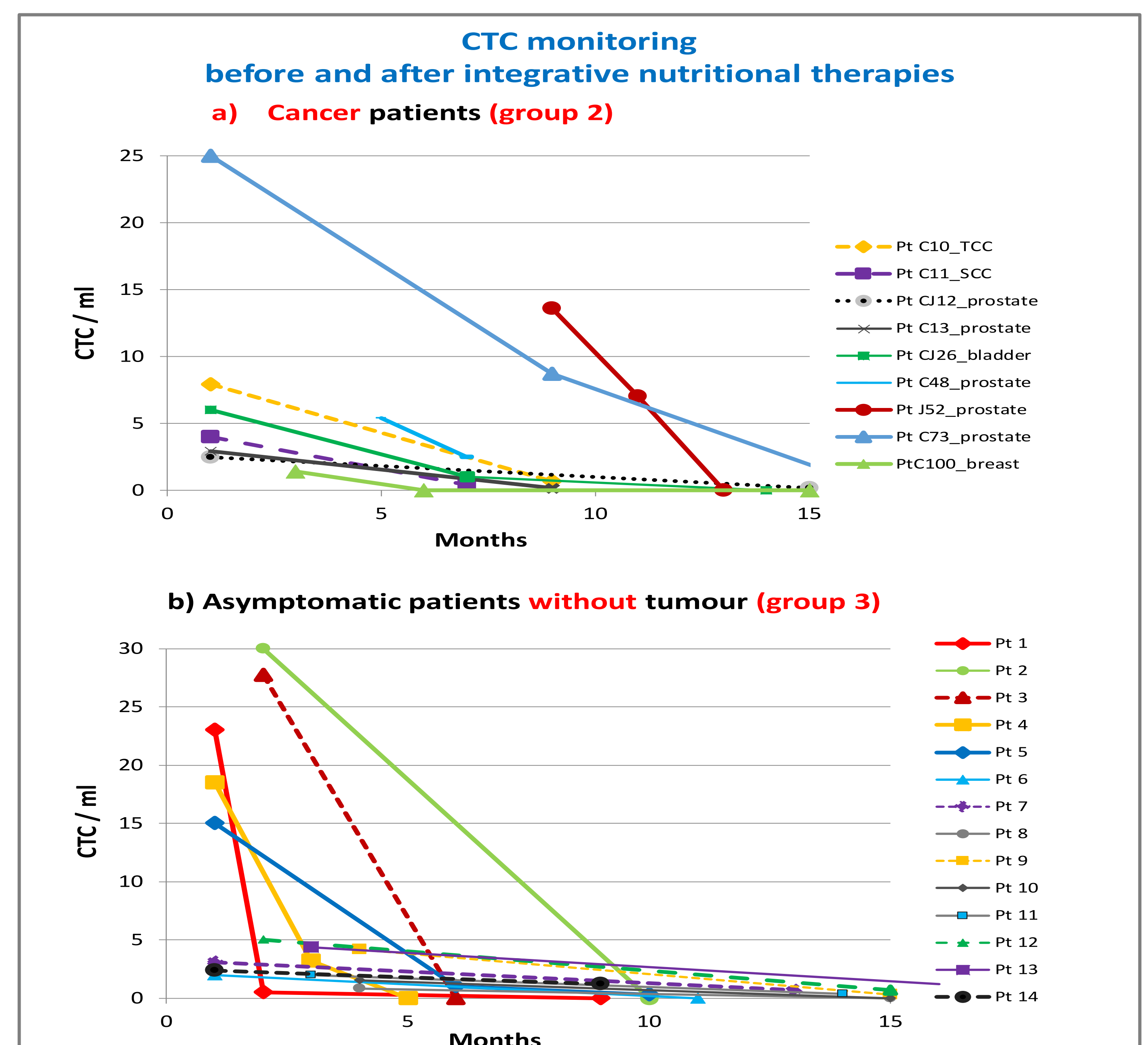
Patients (age)	CTC/ml	Months between CTC and scan	Scan result/ Tumour detected
Males (n=16, mean=66 yrs)	1-12	1-10	Prostate (normal PSA*)
Females (n=2, 37 yrs)	1-2	1-3	Breast
Males (n=2, 47 yrs)	1-8	0.5	Lung
Female (57 yrs)	7	1	Melanoma
Male (54 yrs)	7	1	Kidney
Female (44 yrs)	101	0.5	Ovarian

* PSA = Prostate Specific Antigen levels at time of CTC test

- **Group 2:** In **cancer patients**, CTC count was reduced within 6-12 months after integrative nutritional therapies.
- **Group 3:** In **asymptomatic patients** with positive CTC count but without detected tumour, CTC count was reduced within 6-12 months after integrative nutritional therapies.

Conclusions

- CTC screening provides a sensitive tool for the **early detection** of patients at risk of developing cancer.
- Evidence-based **integrative nutritional therapy** can **reduce CTC count** and cancer risk.



SCC = squamous cell carcinoma; TCC = transitional cell carcinoma