Abstract #6079

ctDNA compared to FIT in individuals with colorectal cancer who participated in population-based screening

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Background

- The fecal immunochemical test (FIT) is widely used in population-based colorectal cancer (CRC) screening programs.
- Recently, **liquid biopsy circulating tumor DNA (ctDNA)** detection has emerged as a new avenue for early cancer detection.
- The performance of ctDNA tests in comparison with FIT is largely **unknown**.

Goal of the study

The present exploratory study compared pre-operative ctDNA results to FIT results in patients with CRC who had participated in a population-based screening program.

Methods – patient inclusion

- CRC patients participating in two ctDNA MDR studies (PLCRC-MEDOCC and PLCRC-PROVENC3) who also had participated in the Dutch national CRC screening program (with either a positive or a negative FIT) were selected.
- Patients with complete pre-surgery ctDNA analysis and at least one participation in the Dutch CRC screening program were included

Methods – analysis

- FIT results from their latest participation was obtained.
- Pre-surgery blood was used for ctDNA analysis
- ctDNA analysis was both tumor and plasma informed
- Several cut-offs were investigated for FIT
- Concordance and complementarity between FIT results and tumor-informed next generation sequencing based ctDNA results were determined.

Screening program, PLCRC-MEDOCC & PLCRC-PROVENC3

- In The Netherlands, all inhabitants aged 55-75 are invited biennially to perform a single FIT (cut-off 47µg/g). Participants with a positive test result are referred for colonoscopy.
- PLCRC-MEDOCC and PLCRC-PROVENC3 are **observational** studies within the Prospective Dutch Colorectal Cancer Cohort (PLCRC, https://plcrc.nl/for-international-visitors).

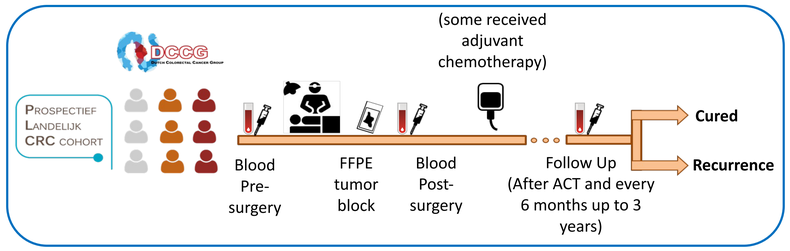
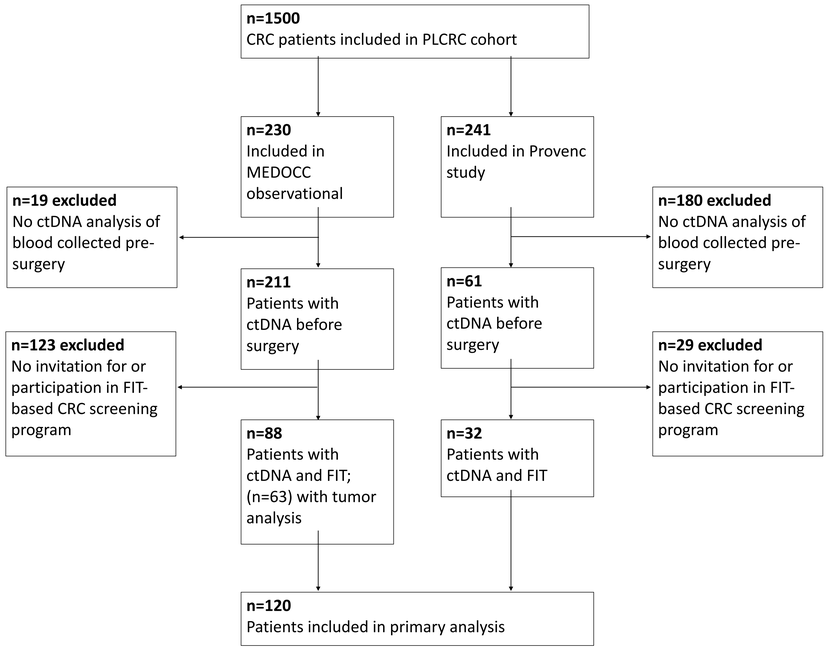


Figure: study flow PLCRC-MEDOCC and PLCRC-PROVENC3

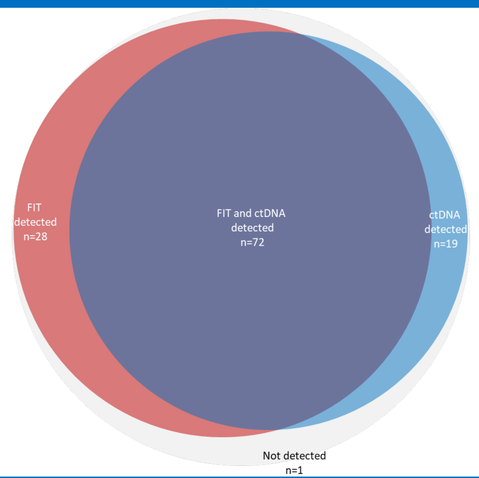
Flowchart inclusion



Tumor characteristics

Tumor characteristics	N (total n=120)	Proportion
Stage		
I	3	2,5%
II	57	47,5%
III	60	50,0%
IV	0	0,0%
Location		
Left colon	53	44,2%
Right colon	57	47,5%
Rectum	9	7,5%
Unknown	1	0,8%

Venn diagram – CRC detection with FIT and/or ctDNA



Conclusions

- In this selected population, both FIT and ctDNA were positive in most CRC patients.
- Interestingly, both tests also demonstrated a **substantial level of complementarity.**
- This suggests that combining FIT with cell-free DNA testing may have potential for increasing sensitivity of CRC screening.

Limitations

- Cell-free DNA tests used here are **tumor-informed**, which in real life screening practice is not feasible.
- The present study population only involved CRC patients and was **not a representative sample** from the total screening target population.

MEDOCC = Molecular Early Detection Of Colorectal Cancer
PLCRC = Prospective Dutch Colorectal Cancer cohort
PROVENC3 = PROgnostic Value of Early Notification by Ctdna in Colon Cancer stage 3

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