Digital breast tomosynthesis increases cancer detection over full-field mammography

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TABLE 1: Comparison of Overall Cancer Detection Rates of DBT and FFDM

Cancer Type	Cancer Detection Rates			
			With FFDM as Reference	
	FFDM Examinations (n = 14,180)[a]	DBT Examinations (n = 9817)[a]	Rate Ratio (95% CI)	p[b]
Total cancers	1.8 (25)	3.7 (36)	2.1 (1.3–3.5)	**0.01**
DCIS	0.5 (7)	0.9 (9)	1.9 (0.7–5.0)	0.22
Invasive	1.3 (18)	2.8 (27)	2.2 (1.2–3.9)	**0.01**
Minimal cancer	1.2 (17)	2.4 (24)	2.0 (1.1–3.8)	**0.03**
Nonminimal cancer	0.6 (8)	1.2 (12)	2.2 (0.9–5.3)	0.09

Note—DBT = digital breast tomosynthesis, FFDM = full-field digital mammography, DCIS = ductal carcinoma in situ.
[a]Values are rate per 1000 with number of examinations in parentheses.
[b]Values in bold are statistically significant.

DBT = digital breast tomosynthesis, FFDM = full-field digital mammography, DCIS = ductal carcinoma in situ.aValues are rate per 1000 with number of examinations in parentheses.bValues in bold are statistically significant. Credit: American Journal of Roentgenology (AJR)

An ahead-of-print article forthcoming in the March 2020 issue of the *American Journal of Roentgenology (AJR)* comparing cancer detection rates (CDR) for screening digital breast tomosynthesis (DBT) versus full-field digital mammography (FFDM) found that DBT results in "significantly increased CDR"—irrespective of tumor type, size, or grade of cancer.

Reviewing consecutive screening examinations performed between October 2012 and September 2014 at a large academic breast imaging

practice, Pragya A. Dang and researchers at Brigham and Women's Hospital in Boston detected 61 cancers in the matched cohort of DBT (n = 9817) and FFDM (n = 14,180) examinations.

CDR measured higher with DBT than with FFDM for invasive cancers (2.8 vs 1.3, p = 0.01), minimal cancers (2.4 vs 1.2, p = 0.03), estrogen receptor-positive invasive cancers (2.6 vs 1.1, p = 0.01), and node-negative invasive cancers (2.3 vs 1.1, p = 0.02.), respectively.

However, the ratio of screen-detected invasive cancers to ductal carcinoma in situ on DBT (3.0) was not significantly different from that on FFDM (2.6) (p = 0.79).

Where CDR were not statistically significant for DBT and FFDM, Dang noted: "We were likely underpowered to show a significant difference because of the smaller number of cancers in these subgroups. For instance, CDR of moderately and poorly differentiated invasive cancers, and for all cancer sizes detected with DBT, was nearly twice that of FFDM, even though it was not statistically significant."

As Dang concluded, "our results suggest that integrating DBT into clinical practice may detect overall more cancers than does FFDM, for all tumor sub-types, grades, sizes, and nodal statuses."

More information: Pragya A. Dang et al, Comparing Tumor Characteristics and Rates of Breast Cancers Detected by Screening Digital Breast Tomosynthesis and Full-Field Digital Mammography, *American Journal of Roentgenology* (2019). DOI: 10.2214/AJR.18.21060

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