FAST FACTS on DCIS

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DCIS Facts for Medical Professionals

Based on the NIH Consensus Conference Report

In 2010, NIH published a State-of-the-Science consensus statement on ductal carcinoma in situ (DCIS), summarizing what we know and what we need to find out.

What we know:

- DCIS consists of abnormal cells confined to the breast duct. Because it is **non-invasive**, some experts recommend removing the anxiety-producing word "carcinoma" from its description. DCIS can develop into invasive cancer, but it is not known how often that happens.
- **The 10-year disease-free survival rate for DCIS patients is 96%-98% when treated** with current therapies. Radiotherapy after excision (lumpectomy) has been shown to reduce the risk of invasive cancer in the same breast as well as a recurrence of DCIS. Effective therapeutic options include: local excision with radiotherapy, local excision with radiotherapy and tamoxifen (for estrogen receptor-positive DCIS), or mastectomy.
- **Survival rates** are similar for patients treated with local excision plus radiation to those treated with mastectomy. There is no evidence that bilateral prophylactic mastectomies improve survival.
- Risk of DCIS **recurrence** is higher for local excision plus radiation (12%; half of whom have invasive cancer) compared to women who choose mastectomy (about 1%).
- While **tamoxifen** reduces the future risk of DCIS and invasive breast cancer in both breasts, it does not improve survival.
- For every four diagnoses of invasive breast cancer in the U.S., there is one diagnosis of DCIS. The growing incidence of DCIS is a direct result of higher mammography screening rates. In 2009, the age-adjusted incidence rate of DCIS was 32.5/100,000 women. **Incidence is highest in women age 50-64 years** at approximately 88/100,000 women.
- DCIS is rarely diagnosed in women younger than 40. Risk increases steadily from age 40 to 50 years, more slowly after age 50, and plateaus after age 60. As with invasive cancer, **risk factors** include high mammographic breast density, family history of breast cancer, increasing age (until age 70), use of combination hormone therapy for menopause (estrogen with progestin), late age at menopause, nulliparity (no births), late age at first birth, and high postmenopausal BMI.
- Average tumor size is 1-1.5 cm, and about half are high-grade. The most common histological subtype is the less-aggressive "noncomedo."
- Most studies show that **MRI** is more sensitive than mammography for detecting multicentric DCIS, but unfortunately MRI has been found to both underestimate and overestimate the size of DCIS lesions. MRI can result in false positive or false negative results in the contralateral breast.

- **Sentinel lymph node biopsy**, which is associated with some risk of complications, is not necessary for the majority of women who have DCIS treated with excision. However, it may be performed in women undergoing mastectomy for DCIS.
- Although prognosis varies, it is possible to predict some of the patients who are at **higher risk for a recurrence** of DCIS or the development of invasive breast cancer. Younger patients, patients with symptomatic presentation (palpable), and black patients are at higher risk. Black women with DCIS have higher recurrence rates and higher mortality after recurrence, compared to white women with DCIS. Some tumor characteristics are also associated with local recurrence and progression to invasive cancer, including high grade, "comedo-type" necrosis, large size, or extensive distribution.

What we don't know:

- Which cases of DCIS, if any, can forego surgery or other therapies and simply be monitored (**active surveillance**) after a biopsy.
- Which women can **forego radiation therapy** after lumpectomy because they would derive little or no added benefit. Radiation therapy has been shown to reduce the risk of DCIS and invasive cancer in the breast treated.
- How wide negative **margins** should be to reduce the risk of local recurrence for lumpectomy patients.
- Whether **partial-breast** radiotherapy or **accelerated radiotherapy** are equally effective as whole-breast radiotherapy.
- Whether **aromatase inhibitors** are as effective as tamoxifen in preventing recurrence and invasive breast cancer among DCIS patients treated through excision.

After the State-of-the Science Conference: The Latest Research

In a 2011 study published in the *Journal of the National Cancer Institute*, Wapnir *et al.* examined **long-term outcomes of DCIS patients** who participated in two randomized clinical trials: the National Surgical Adjuvant Breast and Bowel Project (NSABP) B-17 trial (813 patients) and the NSABP B-24 trial (1799 patients).

The B-17 trial compared **lumpectomy only (L)** treatment to **lumpectomy followed by radiotherapy (L+R)**. The B-24 trial compared **L+R** + placebo to **L+R and tamoxifen (L+R + TAM)**. Results are presented in the tables below.

Endpoints included invasive ipsilateral breast tumor recurrence (I-IBTR), DCIS ipsilateral breast tumor recurrence (DCIS-IBTR), contralateral breast cancers (CBC), and survival (overall, breast cancer-specific, and after I-IBTR).

B-17 and B-24 Data on Recurrence: 15-year cumulative incidence (B-24 trial results are in color)

	Recurrence of DCIS		Invasive breast cancer after DCIS	
Ipsilateral (same breast)	L	15.7%	L	19.4%
	L+R	8.3-8.8†%	L+R	8.9†-10%
	L+R+TAM	7.5%	L+R+TAM	8.5% ‡
Contralateral* DCIS or Invasive	L	10.3%		
	L+R	10.2-10.8%		
	L+R+TAM	7.3% §		

†Significantly lower than lumpectomy alone

‡ Significantly lower than L+R (10%)

* 67% of CBC tumors were invasive

§ Significantly lower than L+R (10.8%)

B-17 and B-24 Data on Treatment Effects: 15-year cumulative incidence (B-24 trial results are in color)

	L	L+R	L+R+TAM
I-IBTR †			
Negative Margins	19.4%	7.4-8.9%	7.5%
Positive Margins	NA	NA-17.4% ‡	11.5%
Breast cancer-related death	3.1%	2.7-4.7%	2.3%

† I-IBTR significantly increased the risk of mortality, whereas recurrence of DCIS did not

‡ Statistically significant compared to L+R negative margins (7.4%)

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