THE PUBLIC ADVOCATE
FOR THE CITY OF NEW YORK
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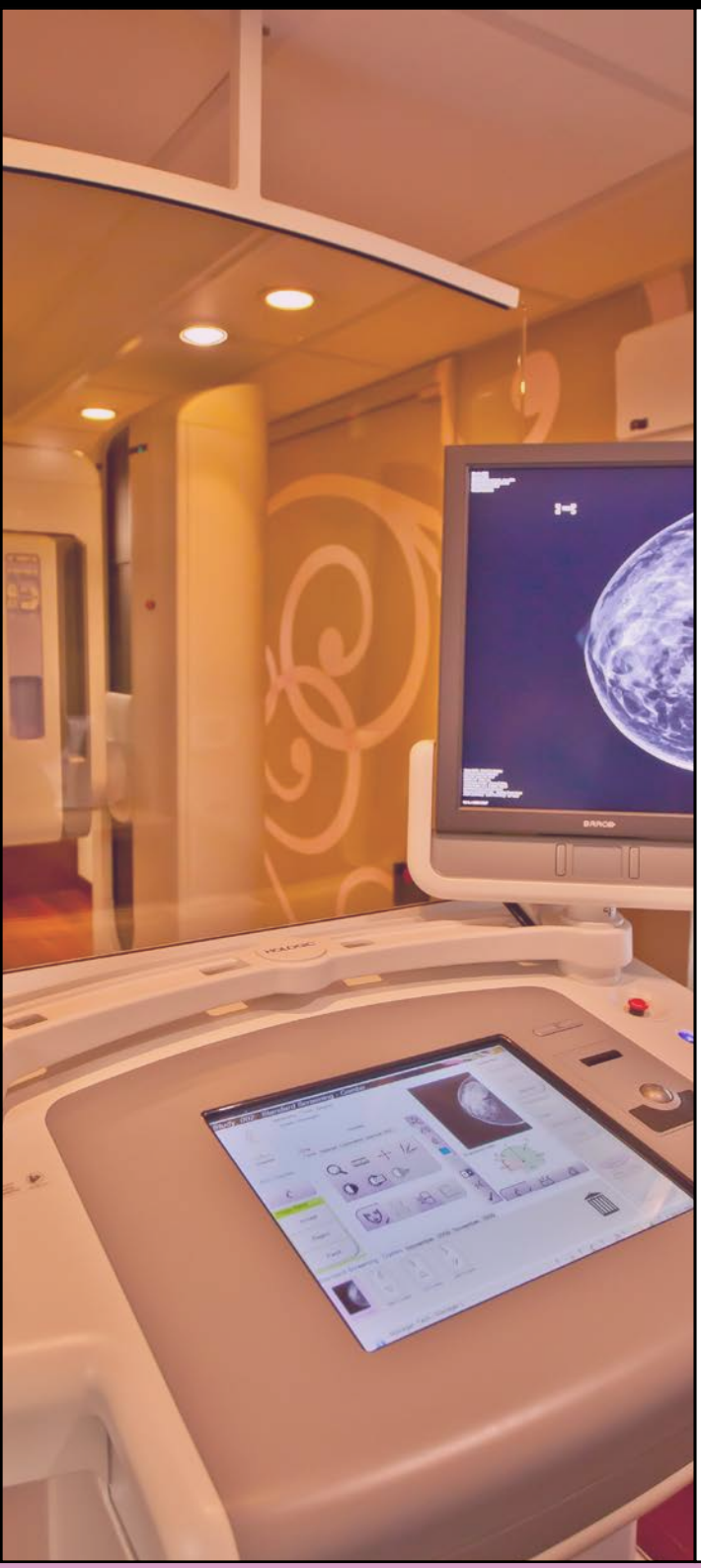

Policy Report: Closing the Gap in Breast Cancer Survival Rates

Expanding Accessibility of 3-D Digital Breast Tomosynthesis at New York City Public Hospitals

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TABLE OF CONTENTS

INTRODUCTION

This report examines how the use of reliable technology, education, and screenings can increase the early diagnosis of breast cancer in New York City. Unequal access to 3-D digital breast tomosynthesis – a new diagnostic tool for the early detection of breast cancer – is a current barrier to timely and effective healthcare delivery for women of color and low-income women, who historically face lower breast cancer survival rates. Since many of these women rely on public hospitals for their healthcare, providing access to 3-D digital breast tomosynthesis through NYC Health + Hospitals (HHC) may be the key to reducing racial and economic gaps in breast cancer diagnoses and survival rates.

Disparities in Breast Cancer Screening and its Mortality Rate

In 2013, more than 230,000 women and 2,000 men were diagnosed with breast cancer in the United States, and around 41,000 women and 450 men died from it during the same year.[1] In New York City, around 5,000 women are diagnosed with breast cancer every year, and around 1,000 women die from the disease.[2] Compared to other types of cancer mortality rates, breast cancer is relatively treatable if caught early. It has a 99 percent five-year survival rate if diagnosed at a localized stage or 85 percent if the cancer has spread regionally.[3]

Breast cancer screening, including clinical breast exams and mammography screenings, are important prevention tools, and experts advocate for access to regular and appropriate screenings for women based on their health and age. Nationally, 69 percent of women over 45 years of age reported having had a mammogram in 2013.[4] Clinical trials have shown in women ages 50 to 69 that biennial mammography screenings reduce breast cancer mortality rates by 16.5 percent.[5]

Despite its overall high survival rate, there are severe racial and economic disparities in breast cancer mortality. While black women are slightly less likely to suffer from breast cancer than white women nationwide, black women are more likely to die from breast cancer.[6] This racial discrepancy also exists at the New York City level.[7] The racial gap in breast cancer deaths started to widen in the early 1990s when new screening techniques and treatments became available.[8] While the breast cancer death rate has fallen by 27 percent among white women between 1990 and 2009, there has only been a 13 percent decrease among black women during the same period.[9] White women who are diagnosed with breast cancer live an average of three years longer than black women.[10]

Black women are twice as likely never to receive treatment, and those who do receive treatment experience a three-month delay in care on average.

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The disparity in breast cancer survival rates may come from the gap in screening and diagnosis. Black women are more likely to be diagnosed later, missing the opportunity to treat their cancer at an early stage when it is most curable.[11] Black women are twice as likely never to receive treatment, and those who do receive treatment experience a three-month delay in care on average.

Compared to black and white women, Hispanic and Asian/Pacific Islander women generally have lower breast cancer incidence and death rates in the United States.[12] However, the incidence and mortality rates vary among sub-ethnic groups, and the cancer rates may change over time due to acculturation – the process by which immigrants adopt the attitudes, values and behaviors in their new culture.[13] While early detection is key to reducing breast cancer death rates, Hispanic women had the lowest participation rate of regular mammography among women over 40 years of age in the U.S.[14]

Women with low-incomes, who are less educated, and who are uninsured have higher death rates.[15] This may be correlated with the fact that insured women are 2.5 times more likely than uninsured women – and college graduates 1.5 times more likely than women without high school diplomas – to have received an annual mammography.[16] In 2013, only 27 percent of women who lived in the U.S. fewer than 10 years received a mammography in the past year while 52 percent of women who were born in the U.S. received one.[17]

Women with dense breasts make up about 40 to 50 percent of the female population, and have approximately twice the risk of developing cancer than others.[18] Today, women in 24 states, including New York, receive a notification if they have dense breast tissue along with their mammogram results.[19] Seven states – Connecticut, Texas, Maryland, Pennsylvania, New Jersey, Missouri, and Louisiana – have taken additional steps to require such notifications to every woman receiving a mammogram screening regardless of their breast density.[20]

Insured women are 2.5 times more likely than uninsured women to have received an annual mammography.

College graduates are 1.5 times more likely than women without high school diplomas to have received an annual mammography.

Certain groups of women, including younger women and women with dense breasts tend to face higher risks of misdiagnosis during traditional breast cancer screenings.[21] According to the American Cancer Society, mammograms miss about 20 percent of breast cancers during the screening, leading to "false negative" cases.[22] "False positive" cases of falsely classifying breast cancer are also common in mammogram screenings.[23]

Misdiagnoses are costly for individuals as well as to society. According to a study that examined over 1.7 million women in the U.S. with false positive results, the burden of direct costs associated with recall – the rate by which patients require additional imaging based on the initial imaging results – was considerable. It costs about 138 dollars among all recalled women and 449 dollars among those who needed biopsies, an examination of a sample tissue taken for the purpose of examining the presence of potential disease.[24] While more than one-quarter of recalled patients incurred no cost through their insurance plans, the rest carried the burden of hundreds of dollars of co-pays due to unnecessary recall.[25]

New Technology: 3-D Digital Breast Tomosynthesis

Digital breast tomosynthesis (DBT), a 3-D X-ray imaging technique, is the newest tool for the early detection of breast cancer. DBT has increased cancer detection rates and decreased the number of false positives, especially among women with dense breasts. DBT is effective, especially for testing dense breasts and decreasing the number of false positives. Unlike the 2-D digital mammography, DBT X-ray cameras move in an arc around the breast while they take multiple images in just a few seconds.[26] A computer then synthesizes this information into a clear 3-D layer-by-layer image of the breast, correcting for the tissue overlap that may hide cancers or mistake dense breast tissue as tumors in standard mammograms.[27]

In 2014, the Journal of the American Medical Association published a comprehensive study of over 450,000 examinations, comparing the effectiveness of breast cancer screenings before and after they started using DBT.[28] The study found that:

- **When DBT was added, more cases of breast cancer were diagnosed:** The cancer detection rate increased by 29 percent when DBT was added. With more serious invasive cancers, the detection rate increased by 41 percent **(Figure 1 and 2).**[29]

Figure 1

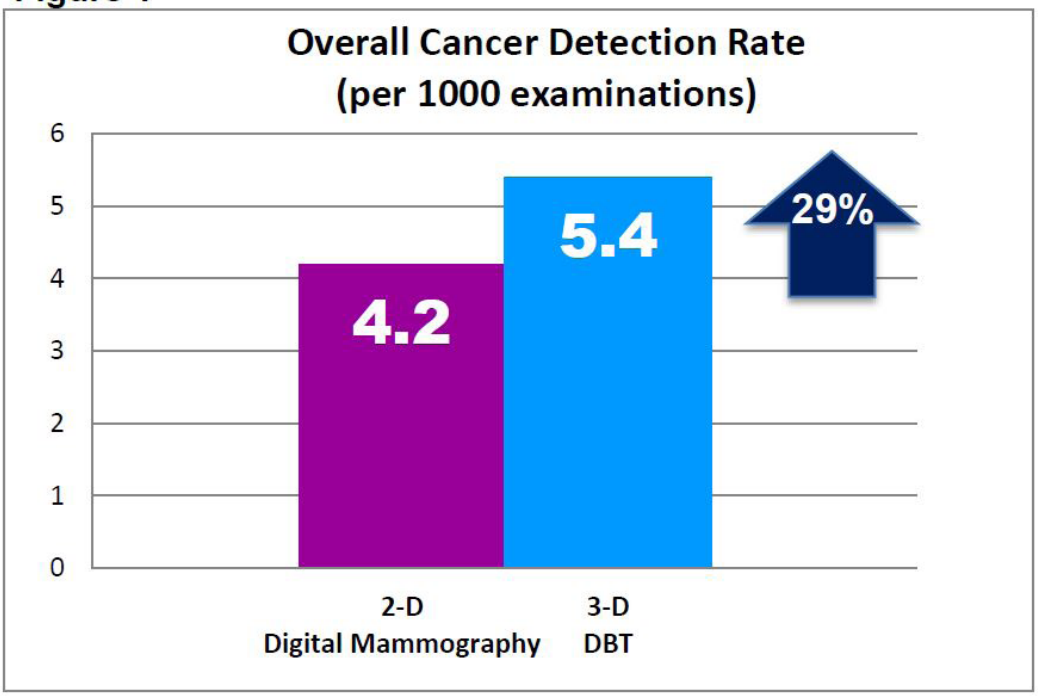
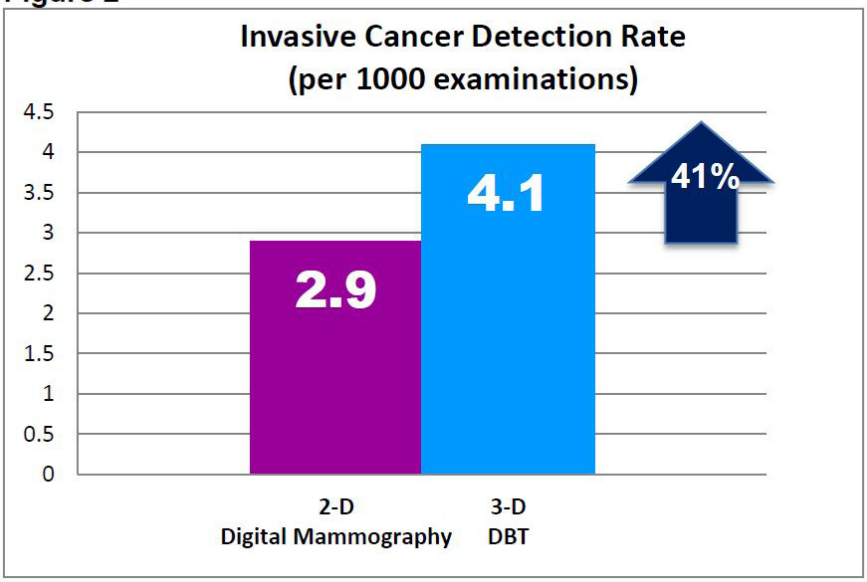
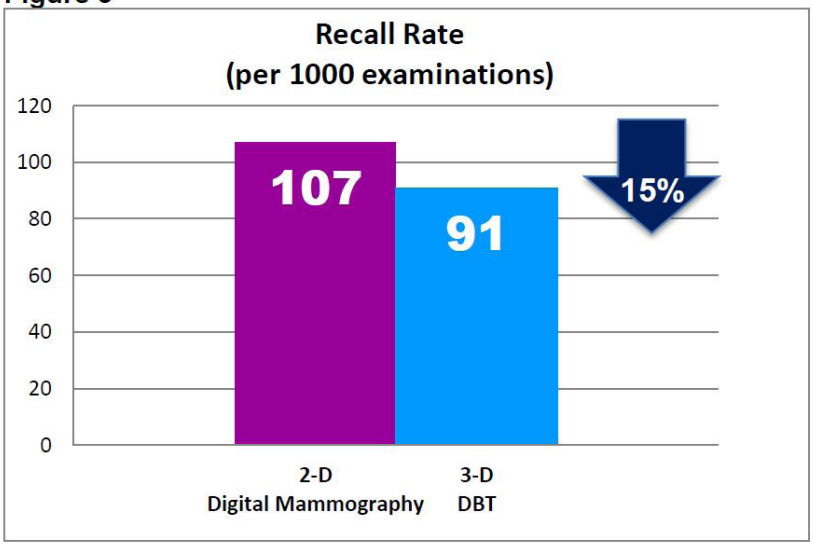


Figure 2



- **When DBT was added, recall rates decreased:** The recall rate dropped 15 percent when screened with DBT **(Figure 3).**[30] As a result, DBT can reduce the number of false positive cases that were associated with the 2-D digital mammography screening.

Figure 3



These results are consistent with several smaller-scale studies in the U.S. and in Europe. Researchers argue that the combination of fewer unnecessary tests and biopsies, along with a simultaneous increase in cancer detection rates, would support the potential benefits of DBT as a tool for screening.[31]

Challenges in New York City

Disparities between diagnoses and death rates of different racial groups in New York mirror national trends. Between 2009 and 2013, white women had the highest rates of breast cancer, but black women had the highest mortality rate from the disease in the City. Similar to the national data, Hispanic and Asian women had both lower breast cancer incidence and mortality rates than black and white women **(Figure 4)**.

In the Bronx and Brooklyn, where a large population of black people and Hispanic people reside,[32] breast cancer mortality rates were the highest among the five boroughs. Contrastingly, Manhattan and Staten Island had the highest breast cancer rates, which may be correlated with the fact they have the highest percentage of the white population among the five boroughs[33] **(Figure 5)**.

Figure 4: New York City Breast Cancer Incidence and Mortality by Race and Ethnicity, 2009-2013 [34]

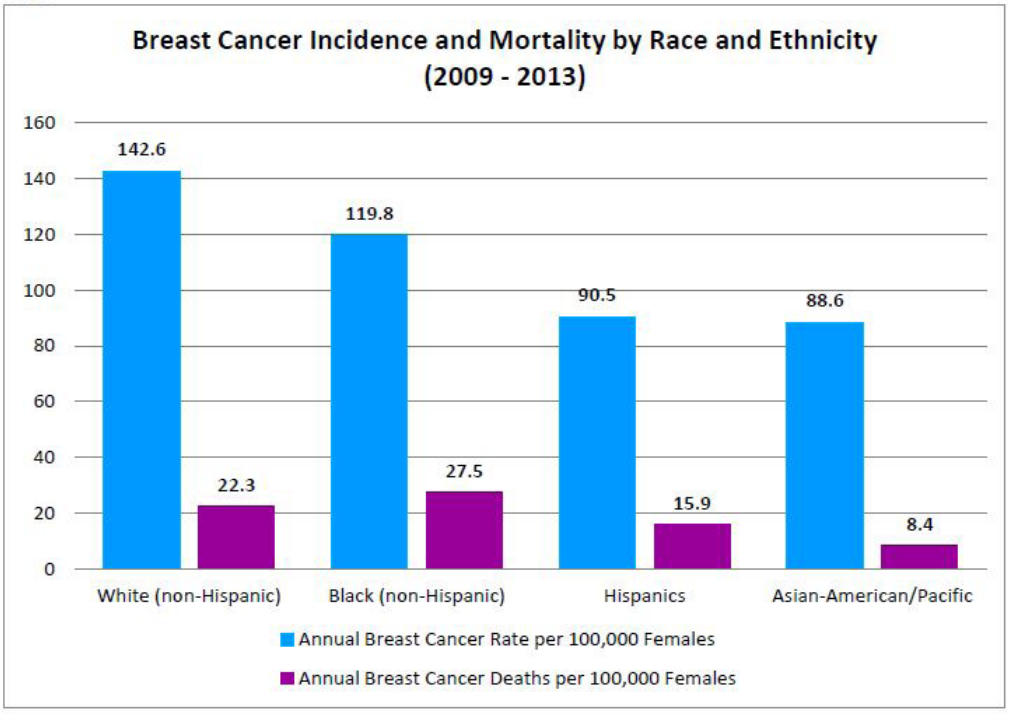
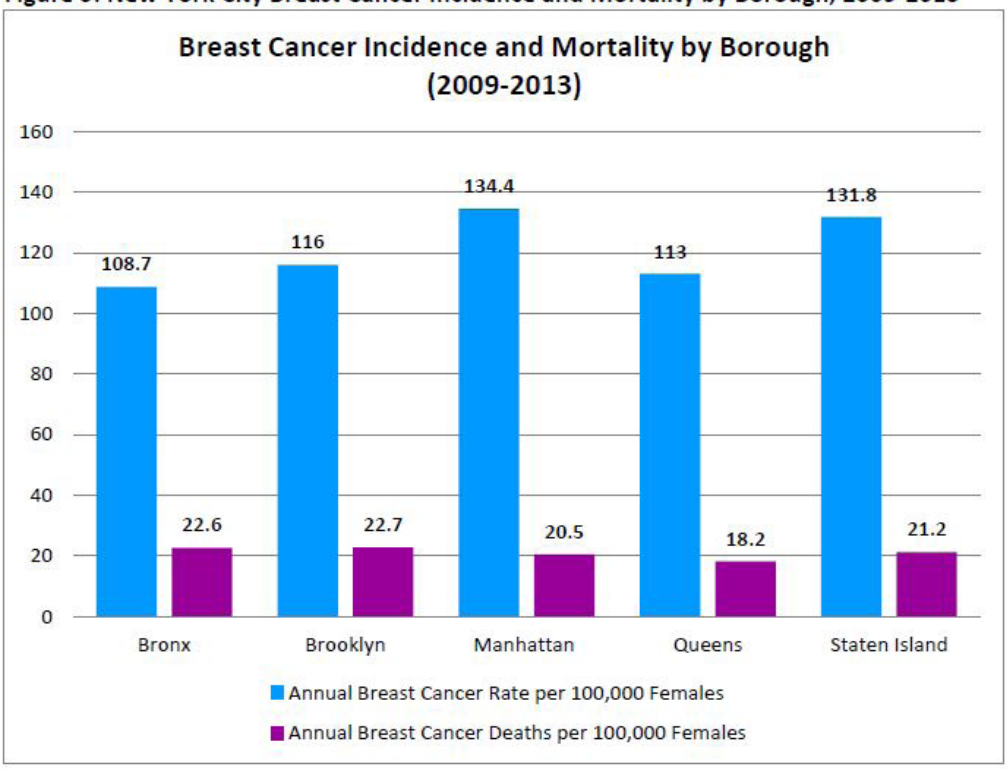


Figure 5: New York City Breast Cancer Incidence and Mortality by Borough, 2009-2013 [35]



One of the key solutions to begin closing racial and economic gaps in breast cancer survival rates is focusing on increasing accessibility to screening throughout the City's NYC Health + Hospitals (HHC) public hospitals.[36] The Community Service Society estimates that 36 percent of HHC patients are black and about 20 percent are Hispanic.[37,38] Moreover, HHC hospitals treat a disproportionally large population of low-income New Yorkers including 500,000 uninsured patients each year.[39] Currently, DBT is covered by Medicare in all states with additional reimbursements available, and Medicaid in 26 states.[40] New York State Medicaid currently does not cover DBT but is under review.

3-D DBT technology is widely available across New York City and Westchester County's private hospitals. DBT may be more available in these private hospitals due to the fact that much of the population that they serve is covered by Medicare, private insurers — under which, many cover DBT — or willing to pay out-of-pocket fees associated with DBT screening exams. However, DBT is currently available at only one of the 11 HHC Hospitals in New York City, leaving a significant portion of New York's black, Hispanic and low-income population, who may be covered by Medicaid or uninsured, without access to this life-saving technology. With coverage from Medicaid, more New York women — regardless of race and/or socioeconomic status — would have access to DBT and earlier breast cancer detection.

Another solution is reducing wait time at hospitals which will increase accessibility to screening and early detection of breast cancer. The longer wait time at public hospitals is currently burdensome for many women. In a 2011 report, appointments for mammograms at private facilities in New York were usually scheduled in 17.2

days; in HHC hospitals, this lag extended to 25 days with the average wait in Manhattan totaling 28.6 days.[41] For many low-income women, having to come to the hospital more than once imposes an indirect financial burden in terms of travel, time off from often-inflexible work and family schedules. Making DBT more accessible and reducing recall rates at public hospitals would alleviate the time and resource pressures of many New York women.

For non-English speaking women, the language barrier is another challenge. A study examining follow-ups of abnormal mammograms found that when asked to return at 30 days due to an incomplete assessment, 67 percent of English speakers returned while only 50 percent of non-English speakers did.[42] Furthermore, minority women typically encounter poor communication after an abnormal mammography result which further leads to less knowledge and increased anxiety, and generates a barrier to timely follow-up care.[43] Minority women have longer delays than white women both pre-clinically and once in care.[44] Without DBT, women are more likely to need additional visits to the doctor and additional testing.

DBT technology, if available in HHC hospitals, can help remedy the racial and economic gaps, for women in the City and decrease nationwide breast cancer mortality rates. Installing a DBT machine at all of the remaining ten HHC hospitals would cost approximately 4.25 million dollars, an investment that would likely help save lives through increased cancer detection and would reduce the number of recall rates – thus saving significant funds – and ease patients' anxiety from false positive results.

Recommendations

NEW YORK CITY

1. **HHC should upgrade the outdated 2-D digital mammography machines to 3-D DBT technology:** As noted earlier, DBT technology reduces false positive testing results and alleviates patients' anxiety. The upgrade in technology would reduce recall rates – producing cost savings – and lessen the barrier for timely follow-up care. Many private hospitals in New York and throughout the country have upgraded to DBT technology, and it is time that HHC invests in DBT to provide the healthcare New Yorkers deserve.

2. **New York City should address the backlog and long waits for breast cancer screenings at public hospitals to ensure earlier diagnosis:** Breast cancer has a 99 percent five-year survival rate if diagnosed at a localized stage through early detection. Updating equipment and machines at hospitals, utilizing efficient queuing techniques to reduce wait times, and using mobile clinics equipped with more DBT machines would help eliminate the long wait times that hinder women's access to early breast cancer diagnosis.

3. **Once DBT is acquired, New York City should include educational information on the new screening technology and encourage women, particularly women of color, to have regular breast cancer screening:** DBT educational information should be included in the City's breast cancer awareness campaigns, including recruiting and training leaders of informal networks such as presidents of Tenants' Associations at NYC Housing Authority (NYCHA) developments to become peer educators.

NEW YORK STATE

4. **New York State Department of Health should add DBT to the Medicaid benefit package:** As shown throughout the report, breast cancer survival rate disparities persist in NYC as well as nationwide. Breast cancer survival rate disparities persist in NYC as shown throughout the report, breast cancer survival rate disparities persist in NYC as well as nationwide. The differences in the survival rate are correlated with access to the screening and diagnosis of breast cancer. New York State must ensure that women who are in most need of affordable healthcare have access to up-to-date breast cancer screening technology. This improvement is in line with Governor Cuomo and the NYS Legislature's newly enacted legislation to improve access to and coverage for breast cancer screening – and would further bridge the gap to access for lower-income women of color.

5. **New York State should provide information about the definition and risks associated with having dense breast to everyone in various languages:** Currently, New York State sends Dense Breast Notification (DBN) letters only to women who were found to have dense breast tissue. Since one of the purposes of these letters is to spread public awareness and discussion of the problem, New York State should consider transitioning to a universal system of informing women about the issue, as seven other states currently do. In a city as diverse as New York, getting the word out about new treatment technologies is also a multilingual affair. About 25 percent of HHC patients have limited English proficiency, requiring HHC to respond to more than 600,000 requests for Spanish language interpretation alone in one year.[45,46] As part of a comprehensive informational campaign, public health officials must coordinate with organizations in diverse communities to get the DBN letters translated into the language of their communities and made available throughout relevant neighborhoods.

Conclusion

One of our key goals should be to achieve top level health care for all New Yorkers, regardless of race, ethnicity, gender or income. In New York, breast cancer is the most common cancer among women, and it is also the second leading cause of cancer-related deaths. Early detection and diagnosis, leading to timely treatment, is the best protection against breast cancer fatalities. Ensuring that all HHC hospitals have 3-D digital breast tomosynthesis (DBT) technology will increase breast cancer detection rates, particularly for more serious invasive cancers, and would reduce the number of recall rates – thus saving significant funds – and ease patients' anxiety from false positive results. Currently, many low income women cannot access the DBT technology since only one out of eleven HHC hospitals has DBT. The City and State must move quickly to address this disparity and reduce the number of women dying from breast cancer. The costs are modest given the savings from recall rates – and the value of the lives saved is immeasurable.

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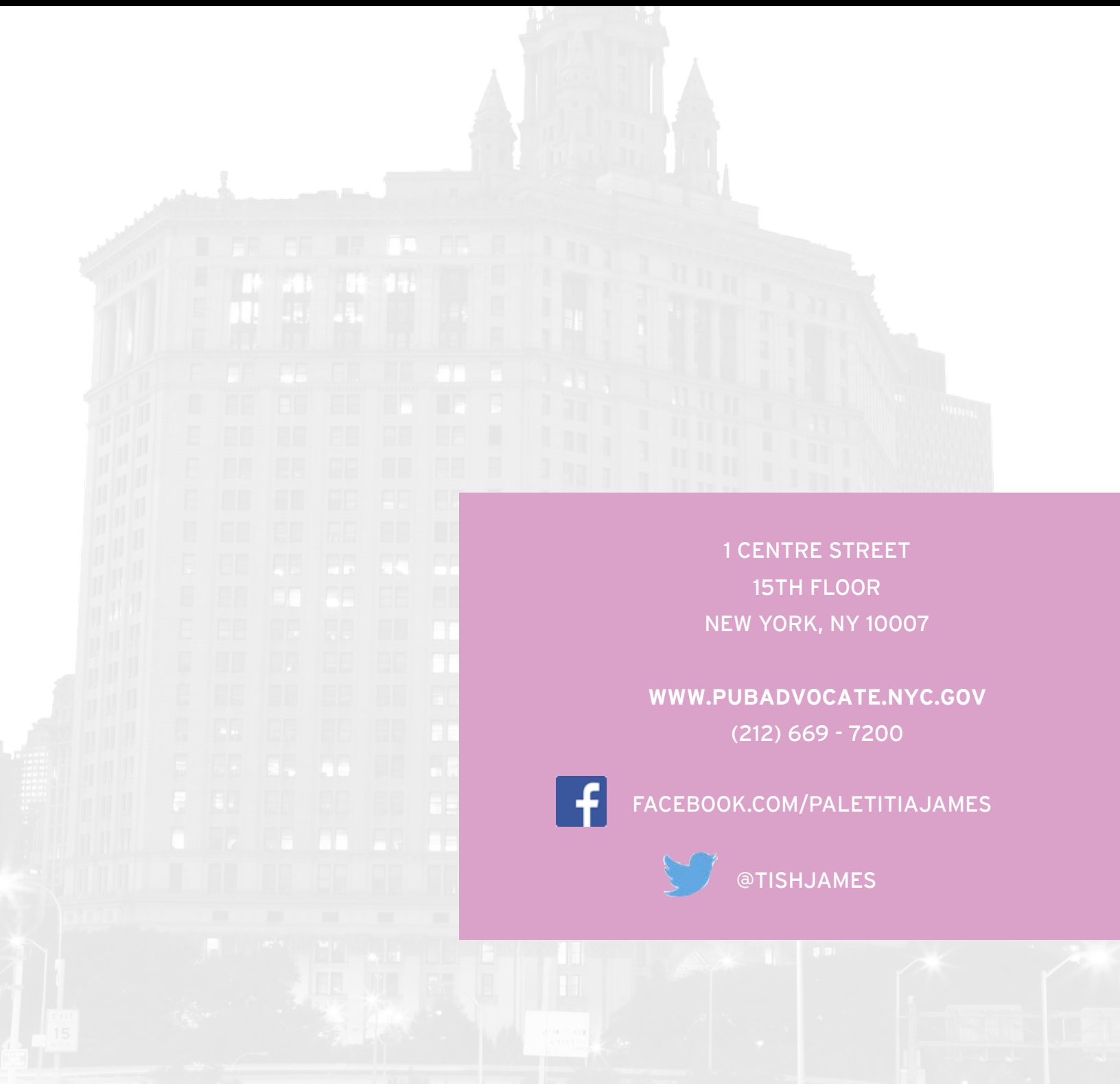

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