# PS1-12-14– Tolerance and Clinical Outcomes in Elderly Patients with Hormone Receptor Positive Breast Cancer Receiving CDK 4/6 Inhibitors at a Rural Comprehensive Cancer Center

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## Background

- Cyclin dependent kinase 4/6 inhibitors (CDK 4/6is) are used in metastatic/ locally advanced hormone-receptor positive (HR+) breast cancer.
- Compared to younger women, elderly women have similar outcomes with CDK 4/6is, but higher rates of dose reductions and delays.[2]
- Our cancer center serves rural/socioeconomically diverse patients:
  - Higher median age in VT/NH compared to the majority of the US
  - 40% of the NH and 71% of the VT population live in rural areas
- We evaluated real-world outcomes of elderly patients, predominantly from rural areas, on CDK 4/6is to elucidate the unique considerations necessary for treatment in our population
- To evaluate the impact of geographic and socioeconomic disadvantages, we investigated the effect of national/state area deprivation index (ADI).

## Methods

- Institutional Review Board-approved retrospective chart review
- Data gathering, Cox regression analysis, and other basic statistics performed by the authors
- 64 patients with metastatic and localized HR+ breast cancer treated with endocrine therapy (ET) and CDK 4/6is aged 65+ at the time of diagnosis who received care at the Dartmouth Cancer Center over the last 5 years
- Tolerance: defined by an aggregate score incorporating the number of side effects, dose interruptions, dose reductions, and hospitalizations
- National (1-100) and state (1-10) ADI were calculated using regional zip codes with higher numbers representing more disadvantage

## Results

**Table 1.** Key Baseline Characteristics/ Outcome Measures

| Value | Median | Range |
|---|---|---|
| Median age at diagnosis (years) | 72 | (65-89) |
| State median ADI score | 6 | (1-10) |
| National median ADI score | 47 | (8-87) |
| Median BMI at start of treatment (kg/m$^2$) | 27 | (15-45) |
| Median PFS in metastatic patients (months) | 10 | (0.5-76) |
| Median OS in metastatic patients (months) | 19.5 | (0.5-40) |
| Median follow-up time (months) | 16.5 | (0.5-76) |

BMI: body mass index, PFS: progression-free survival, OS: overall survival

**Table 2.** Distribution of Patients by Disease Burden/ Therapy

| Characteristic | Number of Patients | Percent of Patients |
|---|---|---|
| Metastatic Status | | |
| Metastatic | 48 | 75 |
| Localized | 16 | 25 |
| CDK 4/6i Drug | | |
| Abemaciclib | 26 | 40 |
| Ribociclib | 20 | 31 |
| Palbociclib | 18 | 28 |
| Endocrine Therapy | | |
| Letrozole | 37 | 58 |
| Anastrozole | 12 | 19 |
| Fulvestrant | 12 | 19 |
| Tamoxifen | 2 | 3 |
| Exemestane | 1 | 2 |

**Table 3.** Dose Reductions/ Interruptions by Disease Burden/ Therapy

| Value | Median | Range |
|---|---|---|
| **Number of dose interruptions** | | |
| **Overall population:** | 1 | (0-3) |
| **CDK 4/6i:** | | |
| Abemaciclib | 0.5 | (0-2) |
| Palbociclib | 0.5 | (0-3) |
| Ribociclib | 1 | (0-2) |
| **Disease burden:** | | |
| Metastatic | 1 | (0-3) |
| Localized | 0 | (0-2) |
| **Length of dose interruptions (weeks)** | | |
| **Overall population:** | 2 | (0-12) |
| **CDK 4/6i:** | | |
| Abemaciclib | 2 | (0-12) |
| Palbociclib | 2 | (0-5) |
| Ribociclib | 1 | (0-6) |
| **Disease burden:** | | |
| Metastatic | 2 | (0-6) |
| Localized | 3.5 | (0-12) |
| **Number of dose reductions** | | |
| **Overall population:** | 0 | (0-3) |
| **CDK 4/6i:** | | |
| Abemaciclib | 0.5 | (0-3) |
| Palbociclib | 0 | (0-3) |
| Ribociclib | 0 | (0-2) |
| **Disease burden:** | | |
| Metastatic | 0 | (0-3) |
| Localized | 0.5 | (0-3) |

- State/national ADI scores and BMI were not associated with reduced tolerance.
- 24 patients expired during the follow-up period
- 58% of patients experienced dose reduction
- COX proportional hazard models did not show significant difference in survival outcomes in patients based on:
  - State ADI (<5 vs. >5)
  - Age (<70 vs. >70 years)
  - CDK 4/6i drug
  - Endocrine therapy
- Patients with higher ADI had a 1.4% higher hazard of death compared to those with lower ADI, but the p value is not significant (HR= 0.986, p-value= 0.98).
- Older patients had a 15.5% lower hazard of death compared to younger patients, but the p value is not significant (HR= 0.845, p-value= 0.71).

## Discussion

- Age, ADI, and BMI did not influence tolerance or outcome measures in our patient population.
- Dose reductions occurred in 45-65% of elderly patients in other trials, similar to our rate of 58%[4,5]
- In pivotal trials, median PFS for elderly patients with metastatic disease on CDK 4/6is and ET was 33.1 months.[3] Our patients had much lower median PFS of 10 months.
  - Our patients may be less fit compared to more selective populations in pivotal trials.
  - Our sample size and median follow-up time are limited
- Rurality itself may affect outcome measures in a distinct way that is not captured through ADI

## Conclusions/ Future Directions

- Historically, older patients have poor tolerance and survival. This is shown in our work, though we are limited by small sample size and short follow up
- Importantly, ADI has limited impact on clinical outcomes, which may represent the tireless efforts of our triage nurses to overcome challenging circumstances
- Historically, high BMI has been shown to have negative impact on outcomes, but we did not observe this trend
- More studies are needed in elderly/rural populations to address their unique challenges
- Despite challenges with toxicity monitoring due to geographic location, drug tolerability and clinical outcomes were on par with historical data

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**References**

1. Finn, R.S., Martin, M., Rugo, H.S., Jones, S., Im, S.-A, Gelmon, K., Harbeck, N., Lipatov, O.N., Walshe, J.M., Moulder, S., Gauthier, E., Lu, D.R., Randolph, S., Dieras, V., Slamon, D.J., 2016. Palbociclib and Letrozole in Advanced Breast Cancer. N Engl J Med 375, 1925–1936.
2. Howie, L.I., Singh, H., Bloomquist, E., Wedam, S., Amiri-Kordestani, L., Tang, S., Sridhara, R., Sanchez, J., Prowell, T.M., Kluetz, P.G., King-Kallimanis, B.L., Gao, J.J., Ibrahim, A., Goldberg, K.B., Theoret, M., Pazdur, R., Beaver, J.A., 2019. Outcomes of Older Women With Hormone Receptor-Positive, Human Epidermal Growth Factor Receptro-Negative Metastatic Breast Cancer Treated With a CDK4/6 Inhibitor and an Aromatase Inhibitor: An FDA Pooled Analysis. JCO 37, 3475–3483.
3. Giroudb, A., Sabatier, R., Rousseau, F., De Nonneville, A., Gonçalves, A., Cecile, M., Bretonnic, C., Vret, F., Seguin, L., Khoury, M., Neudet, D., Hamon, M., & Tassy, L. (2024). The Use of Cyclin-Dependent Kinase 4/6 Inhibitors in Elderly Breast Cancer Patients: What Do We Know? Cancers, 16(10), 1838. https://doi.org/10.3390/cancers16101838
4. Dottorini, L., Sarno, I., Di Menna, G., Luciani, A., Petrelli, F. Breast cancer in older patients: Can CDK 4/6 inhibitors make the difference in the adjuvant setting?, Journal of Geriatric Oncology, 16(3), (2025). https://doi.org/10.1016/j.jgo.2025.102213
5. Kahraman, S., Yücel, M., Demirel, B.C. et al. Activity of CDK4/6 inhibitors and parameters affecting survival in elderly patients in age-subgroups: Turkish Oncology Group (TOG) retrospective study. BMC Cancer 24, 1592 (2024). https://doi.org/10.1186/s12885-024-13357-5

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