PATIENT AND REGIONAL FACTORS CONTRIBUTING TO DELAYS IN ADJUVANT CHEMOTHERAPY FOR STAGE III COLON CANCER IN GERMANY (2000–2023) – *Insights from Berlin, Brandenburg and Saxony-Anhalt*

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BACKGROUND

- Adjuvant chemotherapy (AC) improves survival in stage III colon cancer, especially when initiated within 6–8 weeks post-surgery *(Petrelli et al., 2019; Kim et al., 2017)*
- Delays beyond 8 weeks are linked to worse survival *(Ahmed et al., 2023; Gao et al., 2018)*
- Regional and health system factors driving delays in Germany are understudied
- Socioeconomic, geographic, and organizational influences (e.g., distance, hospital variation) may affect timely AC

OBJECTIVES

- We aim to explore spatial and individual-level variation in AC delay in the federal states of Berlin, Brandenburg and Saxony-Anhalt
- To identify predictors of delayed initiation (>8 weeks after surgery)

METHODS

Study population

- Population-based real world data from the cancer registries of Berlin (2017-2023), Brandenburg and Saxony-Anhalt (both 2000–2023). Adults (18 – 100 years) with diagnosis of colon cancer (ICD-10: C18) in stage III
- Included: stage III colon cancer patients with curative resection (within 3 months after diagnosis)

Main Outcome

- Delayed AC: >8 weeks between complete remission (no recurrence) after primary tumor resection and chemotherapy initiation

Analysis

- Software R, Version 4.3.2
- Descriptive statistics
- Spatial mapping of timely treatment by district
- Multivariable regression modelling (GAM-models) with consideration of clustering (e.g., random effects for district) (planned) **Covariates** - Age, sex, ECOG, GISD (German Index of Socioeconomic Deprivation, *Michalski et al., 2022*), travel time to treating facility, year of diagnosis.

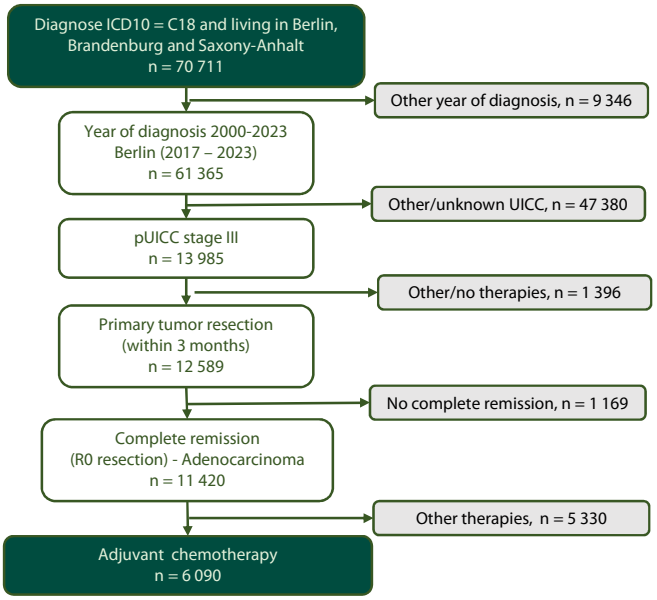

Figure 1. Flow chart of the study population

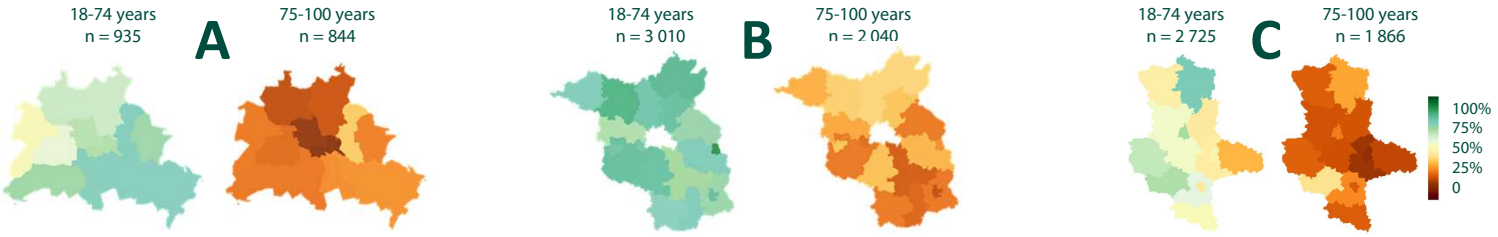

Figure 2. Regional variation in application of adjuvant chemotherapy (yes/no) age-stratified in A) Berlin, B) Brandenburg and C) Saxony-Anhalt

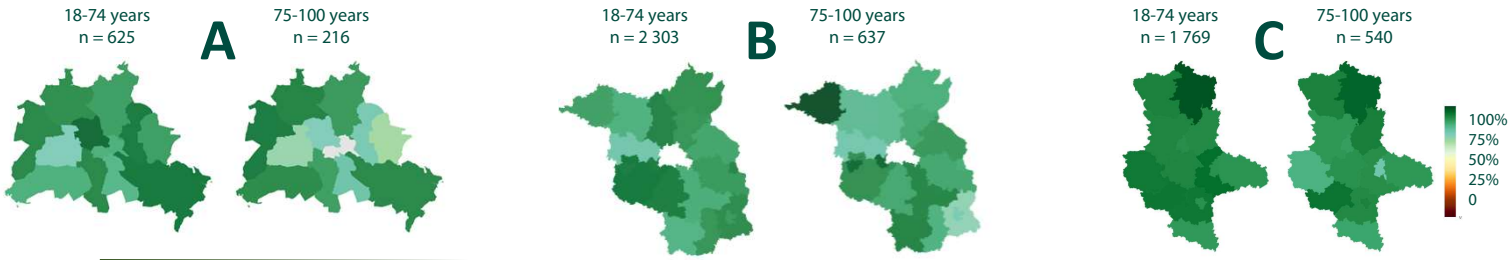

Figure 3. Regional variation in timely initiation of adjuvant chemotherapy (8 weeks) age-stratified in A) Berlin, B) Brandenburg and C) Saxony-Anhalt

RESULTS

Preliminary insights (n = 6 090 stage III colon cancer patients)

- According to the S3-guideline, AC is recommended without age-restriction, but treatment seems to be less frequent regarding age of 75+ because of lack of evidence
- Substantial regional variation in AC timeliness
- Age appears to play a modifying role
- Data strengths: : includes all registry-recorded stage III cases – no selection bias Hypothesized drivers: access barriers (travel time, rurality), patient-factors (performance status), system-factors (hospital resources)

Next steps

- Consideration of temporal variation within and substance specific effects on AC initiation
- Develop multivariable predictive models to quantify independent effects of travel time, GISD, year of diagnosis, and temporal trends
- Fit generalized additive models (GAMs) to capture non-linear associations and district-level random effects

CONCLUSION

- **Delays in AC** remain common and vary markedly by district and age
- This research may provide valuable insights to understand and improve healthcare strategies and outcomes for patients with stage III colon cancer across different socio-economic backgrounds in Germany

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