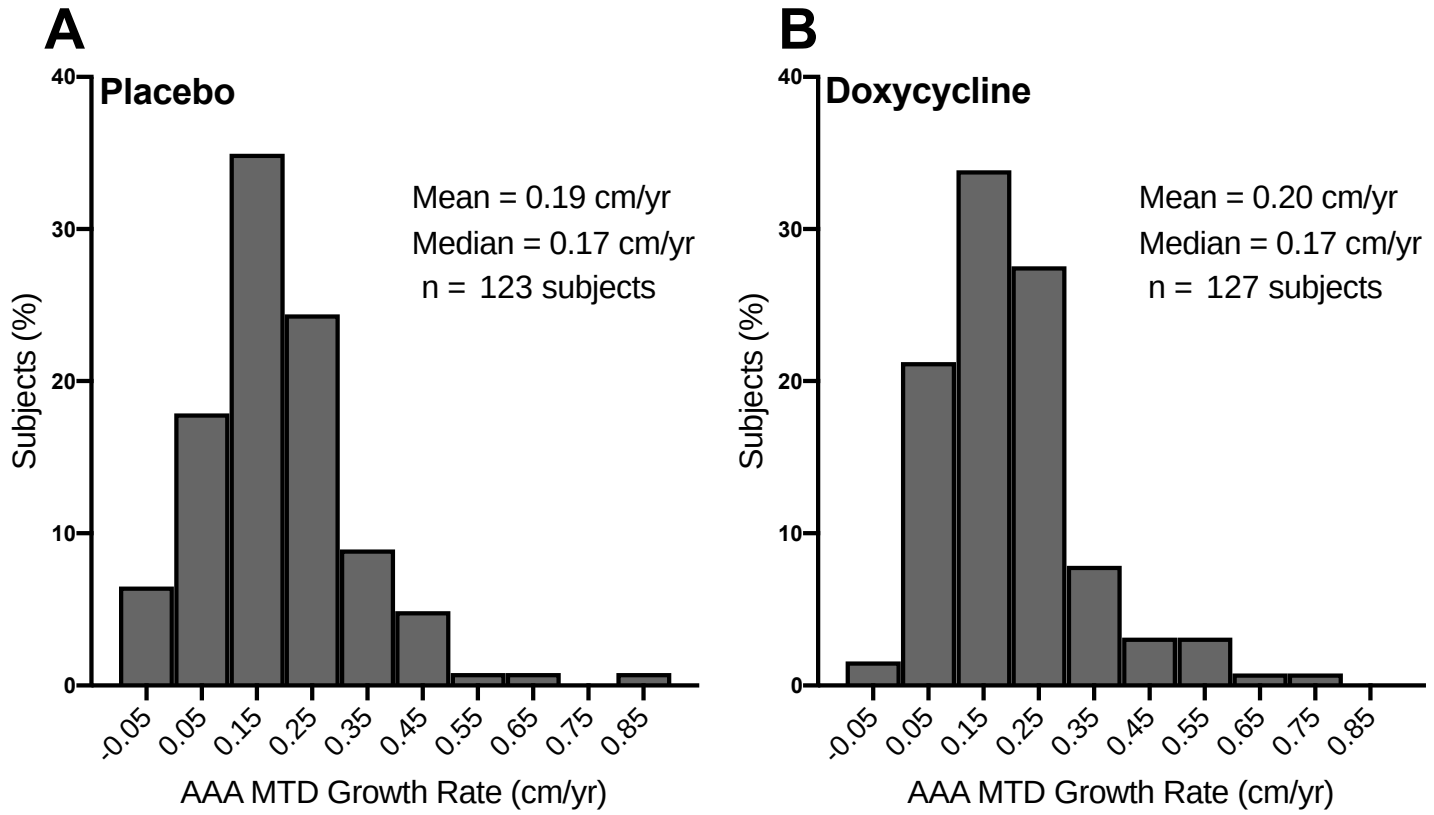
Supplemental Online Content

Olson SL, Wijesinha MA, Panthofer AM, et al. Evaluating growth patterns of abdominal aortic aneurysm diameter with serial computed tomography surveillance. *JAMA Surg*. Published online February 17, 2021. doi:10.1001/jamasurg.2020.7190

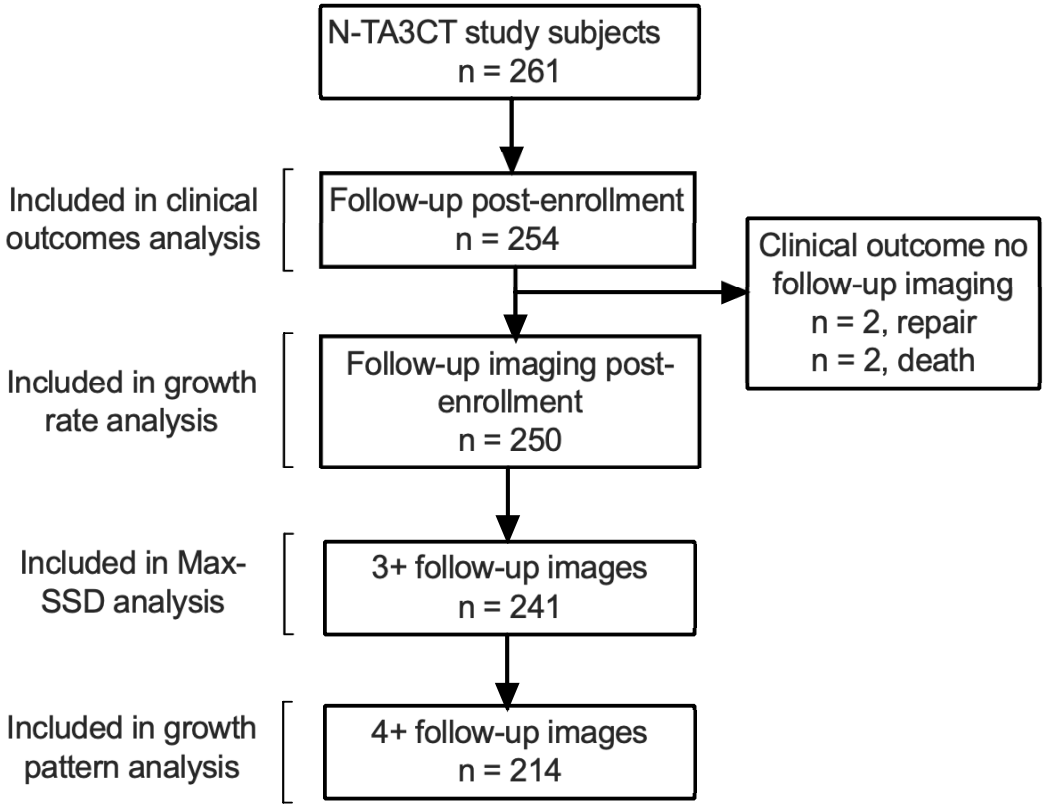
This supplemental material has been provided by the authors to give readers additional information about their work.

eFigure 1. Distribution of yearly MTD growth rates by N-TA^{3}CT treatment assignment.

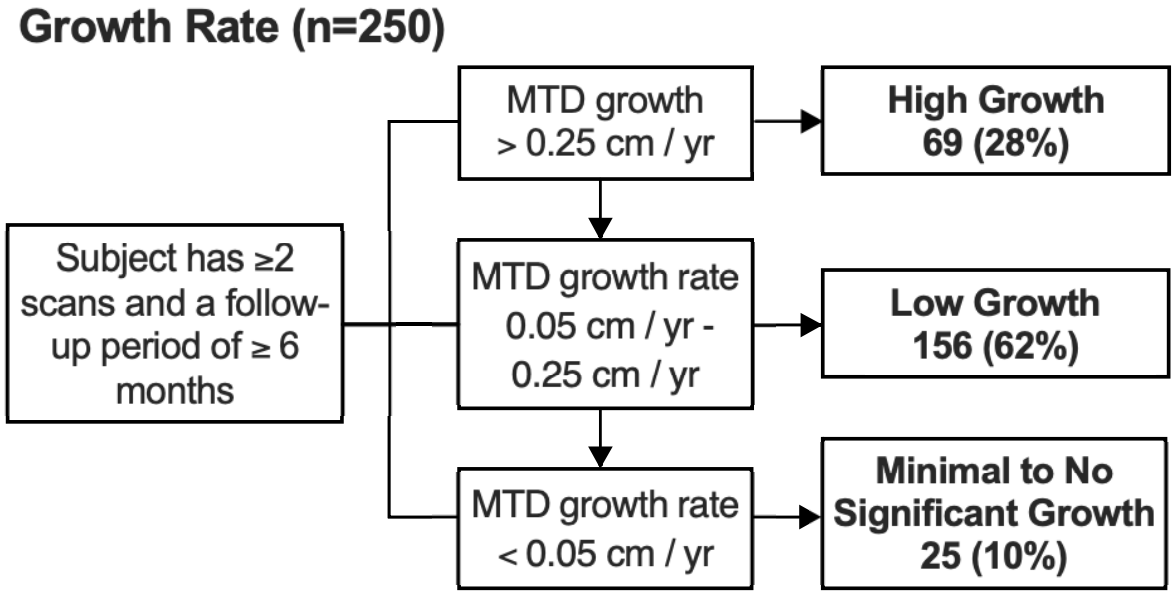


Patients were included if they had measurement data from ≥ 2 CT scans (n=250). Growth rates were calculated in cm/yr based on the linear regression for each patient. (A) 123 patients assigned placebo, (B) 127 patients assigned doxycycline. No significant differences between growth rates were observed.

eFigure 2. Subject inclusion flow chart.

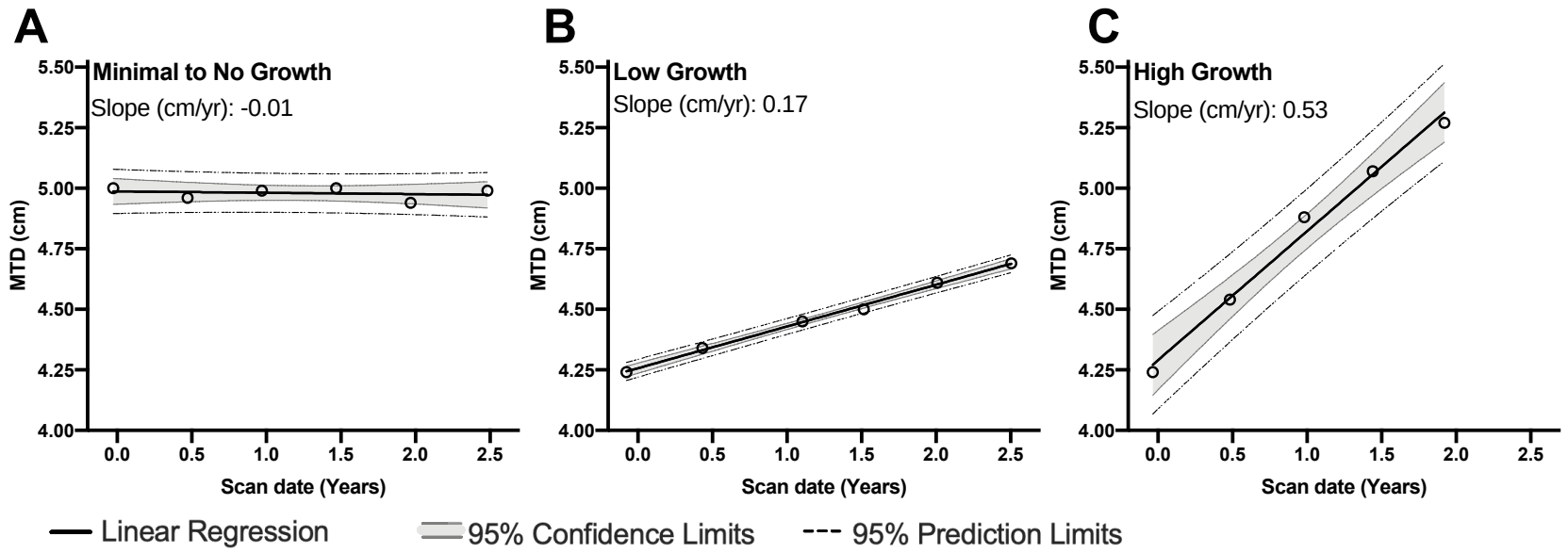


eFigure 3. Proposed clinical imaging definitions for describing small abdominal aortic aneurysm growth rates.



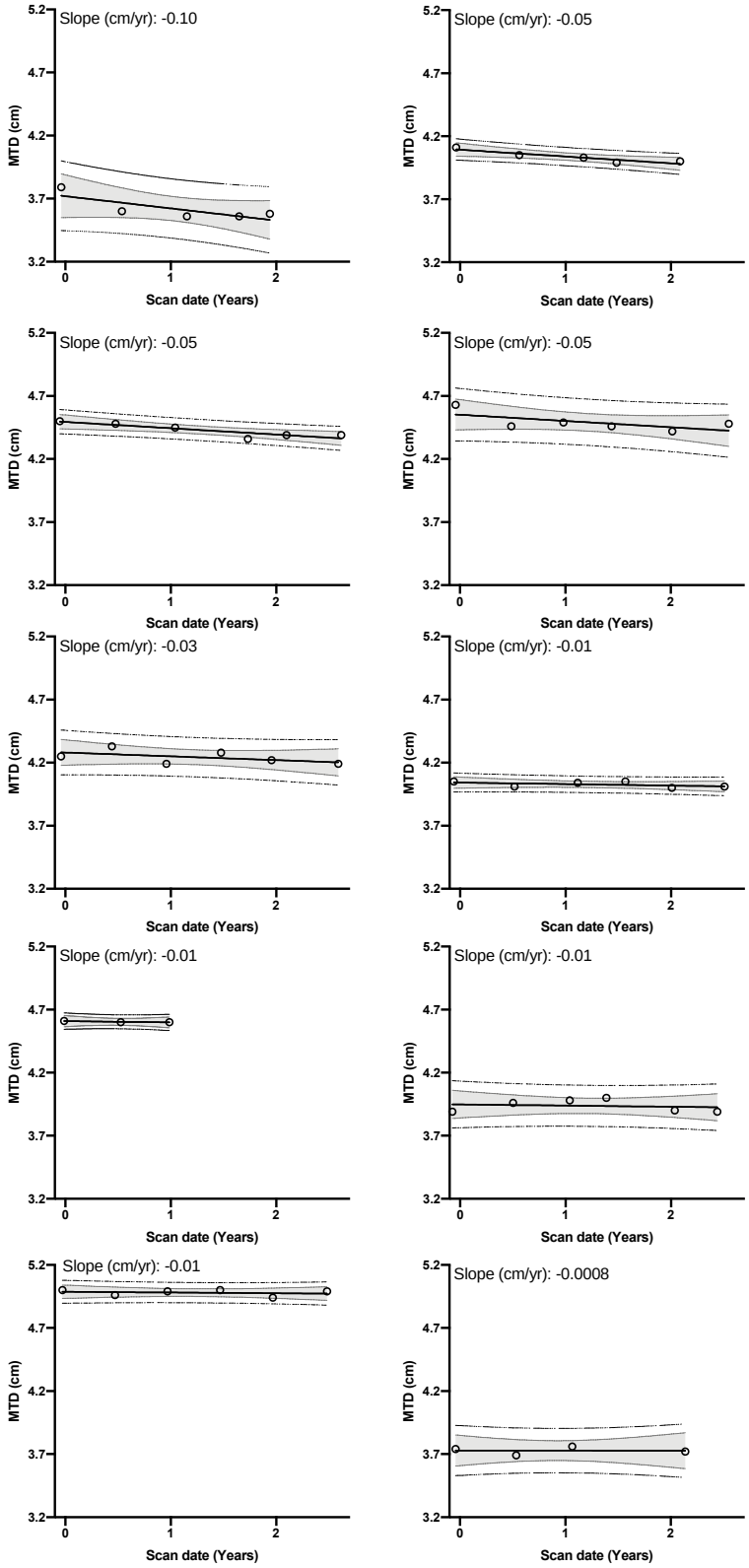
Patients were assessed for growth values at all available imaging intervals. Patient growth rate was assessed if they had ≥ 2 CT scans through 6 months of follow-up (n=250). Growth rates were calculated from linear regressions developed for each patient.

eFigure 4. MTD growth rate individual examples.



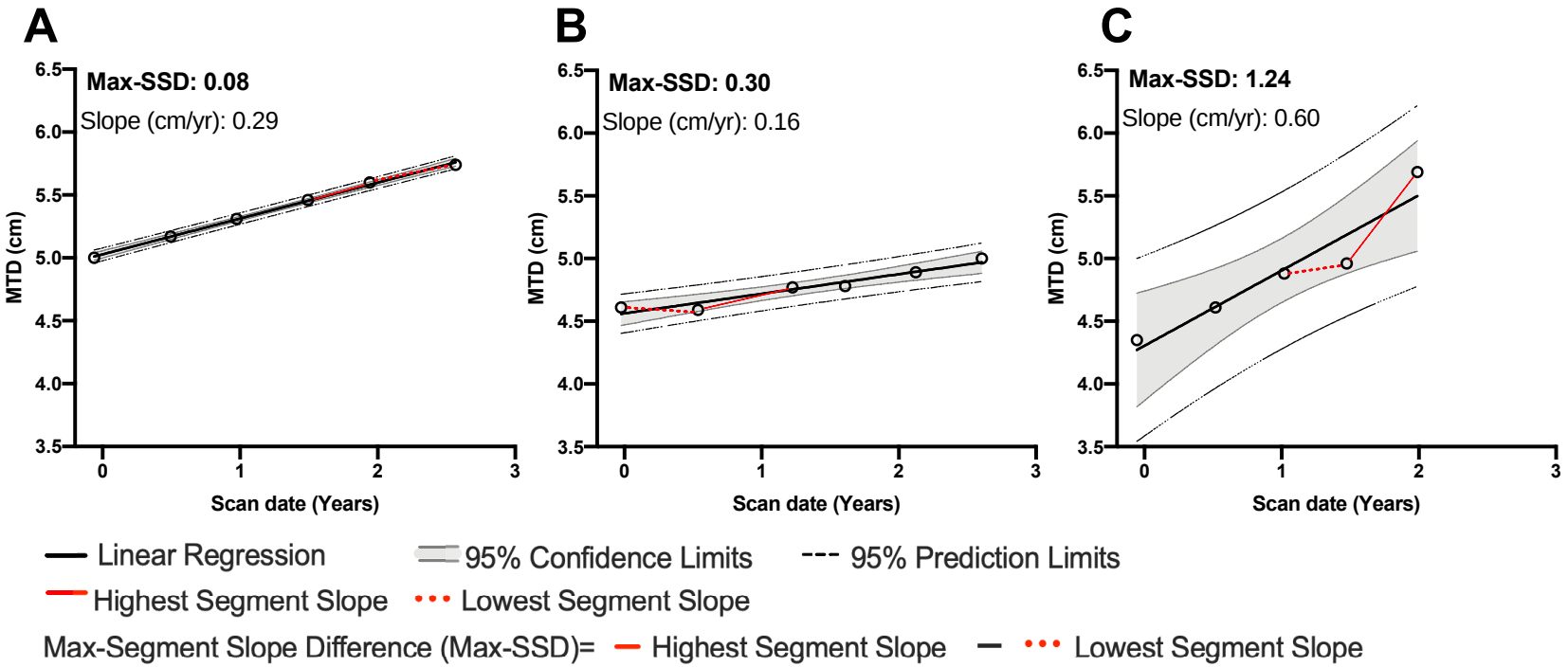
Linear regressions were calculated for each patient based on measurement and study day. Patients were included if they had measurement data from ≥ 2 CT scans (n=250). (A) MTD vs time measurements for a representative patient showing “minimal to no growth” rate. (B) MTD vs time measurements for a representative patient showing a “low growth” rate. (C) MTD vs time measurements for a representative patient showing a “high growth” rate.

eFigure 5. Subjects with negative growth rates per linear regression modeling.



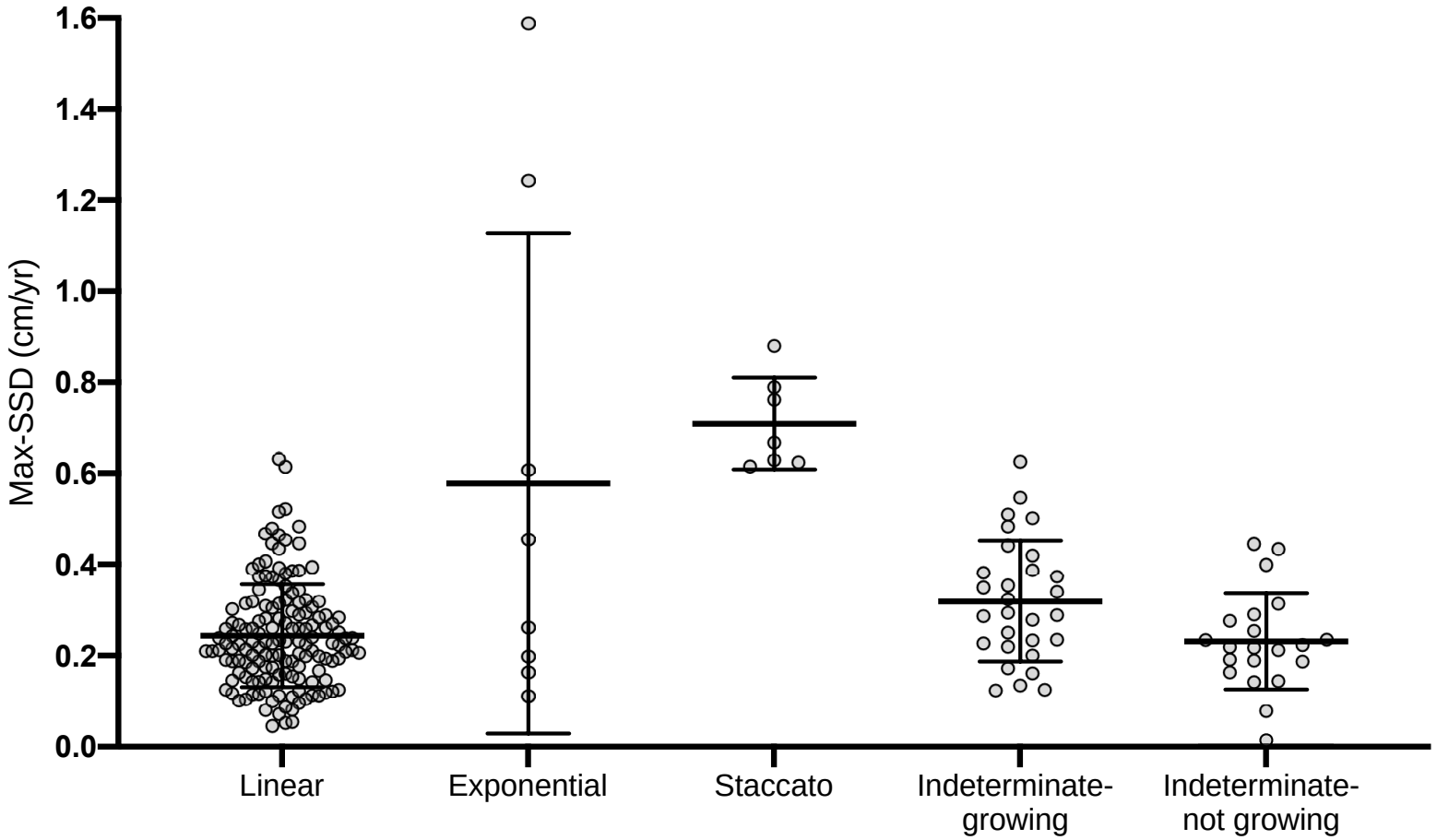
The individual growth plots of the 10 subjects with negative growth rates show that these patients had stable aneurysms; biologic and measurement variations contributed to the appearance of negative annual growth.

eFigure 6. Distribution of maximum segment slope difference (max-SSD) individual examples.



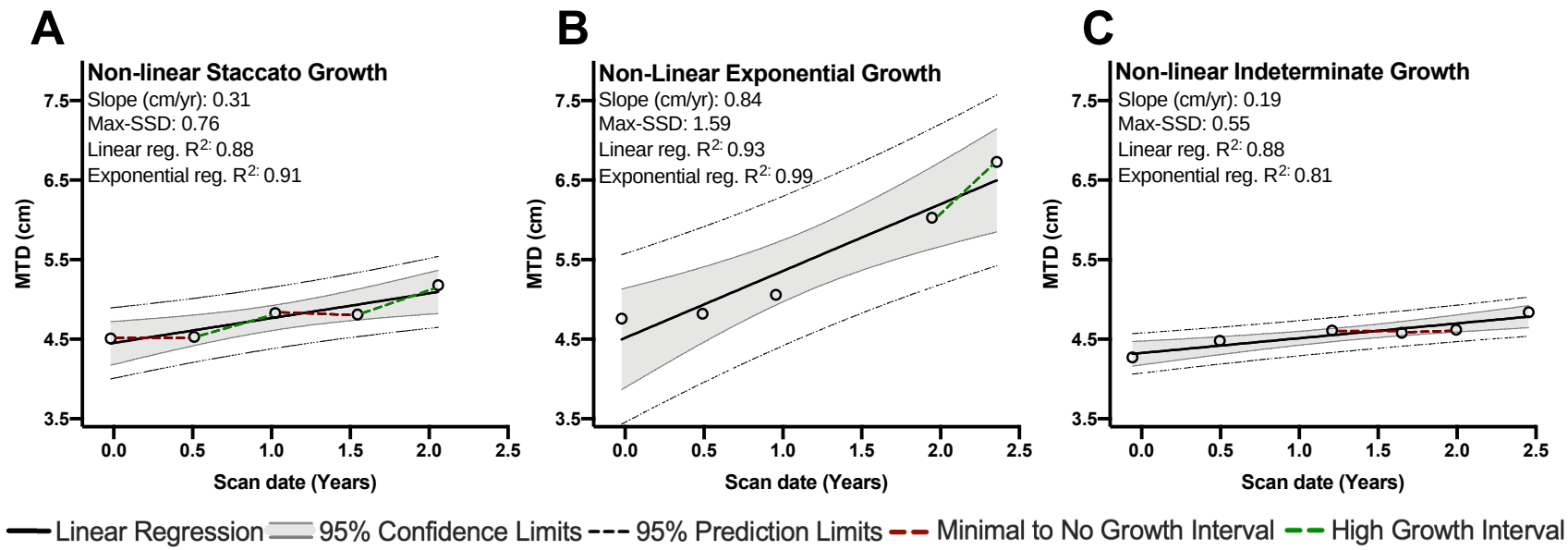
Max-SSD values for each patient measure the difference between the highest growth rate (cm/yr) between two consecutive scans and the lowest growth rate between two consecutive scans. (A) MTD vs time measurements for a representative patient showing a high growth rate and highly linear growth. (B) MTD vs time measurements for a representative patient showing an average growth rate and linear growth. (C) MTD vs time measurements for Max-SSD outlier patient showing a very high growth rate and non-linear growth.

eFigure 7. Maximum segmental slope differences (max-SSD) of AAA growth patterns.



Patient growth pattern was assessed if they had ≥ 4 scans through 18 months of follow-up (n=214). max-SSD, the range of segmental growth rates between consecutive scans, was calculated for all subjects who underwent growth pattern analysis. Error bars show SD around the group mean.

eFigure 8. Individual Examples of Non-linear Growth Patterns.



Linear regression lines were calculated for individual patients and representative examples of common growth trends are displayed. (A) The definitions put forth by prior studies and ourselves concur that some patients' aortic growth trends are best classified as staccato. This example shows multiple phases of high and no growth. (B) A subject with growth that is better fit by an exponential regression and visually appears exponential. (C) Subjects that were not fit well by linear regression, exponential regression, or staccato growth were classified as indeterminate growth pattern.