Lesions adverse characteristic scoring

**Diameter reduction***
- Total occlusion x5
- Significant lesion (50-99%) x2

**Total occlusion (TO)**
- Age >3 months or unknown +1
- Blunt stump +1
- Bridging +1
- First segment visible beyond TO +1/ per non-visible segment
- Side branch (SB) - Yes, SB <1.5mm** +1
  - Yes, both SB < & ≥ 1.5mm +1

**Trifurcations**
- 1 diseased segment +3
- 2 diseased segments +4
- 3 diseased segments +5
- 4 diseased segments +6

**Bifurcations**
- Type A, B, C +1
- Type D, E, F, G +2
- Angulation <70° +1

**Aorto ostial stenosis**
+1

**Severe tortuosity**
+2

**Length >20mm**
+1

**Heavy calcification**
+2

**Thrombus**
+1

*In the SYNTAX algorithm there is no question for % luminal diameter reduction. The lesions are considered as significant (50-99% luminal diameter reduction) or occlusive.

**If all the side branches are 1.5mm in diameter, no points are added since the lesion is considered as a bifurcation and it will be scored as such.

a) An example of a bifurcation lesion with a wide angle (>70 degrees) between the side branch and the distal main vessel. Although technical challenging sometimes, the stent can fully cover both the proximal and distal rims of the side branch ostium.

b) An example of a bifurcation with a steep angle (<70 degrees) between the side branch and the distal main vessel. Side branch stenting might be technically less challenging compared to the previous anatomy but when the stent is placed to cover the distal rim of the ostium the proximal rim will remain uncovered (red line with arrows). If the stent is placed to cover the proximal rim it will protrude into the main vessel distally. mv denotes main vessel, sb denotes side branch.

**Bifurcation classification (modified from Duke and ICPS classifications systems)**

**Type A:** Pre-branch stenosis not involving the ostium of the side branch.

**Type B:** Post side branch stenosis of the main vessel not involving the origin of the side branch.

**Type C:** Stenosis encompassing the side branch but not involving its ostium.

**Type D:** Stenosis involving the main vessel and ostium of the side branch.

**Type E:** Stenosis involving only the ostium of the side branch.

**Type F:** Stenosis directly involving the main vessel (pre-side branch) and the ostium of the side branch.

**Type G:** Stenosis directly involving the main vessel (post-side branch) and the ostium of the side branch.
**Definition of coronary tree segments & weighing**

1. RCA prox: From ostium to one half distance to acute marginal.
2. RCA mid: From end of first segment to acute margin.
3. RCA distal: From acute margin to the origin of the PDA.
4. PDA: Running in the posterior interventricular groove.
5. Posterolateral branch from RCA: Posterolateral branch originating from the distal coronary artery distal to the crux.
6. Posterolateral branch from RCA: First posterolateral branch from segment 16.
7. Posterolateral branch from RCA: Second posterolateral branch from segment 16.
8. Posterolateral branch from RCA: Third posterolateral branch from segment 16.
9. LM: From LCA ostium through bifurcation into LAD & left Cx branches.
10. LAD prox: Proximal to and including first major septal branch.
11. LAD mid: LAD immediately distal to origin of first septal branch and extending to the point where LAD forms an angle (RAO view). If this angle is not identifiable this segment ends at one half the distance from the first septal to the apex of the heart.
12. LAD apical: Terminal portion of LAD, beginning at the end of previous segment and extending to or beyond the apex.
13. D1: The first diagonal originating from segment 6 or 7.
14. D1a: Additional D1 originating from segment 6 or 7, before segment 8.
15. D2: Originating from segment 8 or transition between segment 7 & 8.
17. Prox Cx: Main stem of Cx from its origin of LM & including OM1 branch.
18. Intermediate/anterior lateral artery: Branch from trifurcating left main other than proximal LAD or LCX. It belongs to the circumflex territory.
19. OM: First side branch of Cx running in general to area of OM.
20. OMb: Second additional branch of Cx running in same direction as 12.
21. Distal Cx: The Cx stem distal to origin of most distal OM, running along the posterior left AV groove. Caliber may be small or artery absent.
22. Left posterolateral: Running to the posterolateral surface of LV. May be absent or a division of OM.
23. Left posterolateral a: Distal from 14 and running in same direction.
24. Left posterolateral b: Distal from 14 & 14a, running in same direction.
25. Posterior descending: Most distal part of dominant left Cx, when present. Gives origin to septal branches. When present, segment 4 is usually absent.

**Total occlusion length assessment**

- **a)** Total occlusion involving segments 1 & 2. Segments 2, 3, 4, 16a, 16b, 16c are filled by antegrade or retrograde collateral flow (visualised by contrast).
- **b)** Total occlusion involving segments 1, 2 & 3. Segments 3, 4, 16a, 16b, 16c are filled by antegrade or retrograde collateral flow (visualised by contrast).
- **c)** Total occlusion involving segments 1, 2, 3, 4, 16 & 16a. Segments 16, 16b, 16c are visualised by antegrade or retrograde collateral flow (visualised by contrast).