

Image Quality Based Program Selection: Stepwise Improved Radioprotection

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Background

- ▶ Growing radiation awareness
 - ▶ Default standard dose settings by manufacturers aim at optimal image quality
 - to seduce possible buyers
 - to improve their reputation
- are these medium dose settings always required?



Methods

- ▶ Two Siemens cardiac imaging systems (Artis Q 'room 3' and Axiom Artis dBC 'room 9')
- ▶ Service technicians set the **start-up defaults** for both fluoroscopy and ciné to **low dose** settings
- ▶ Operators were instructed to **switch to higher dose mode only when needed clinically**



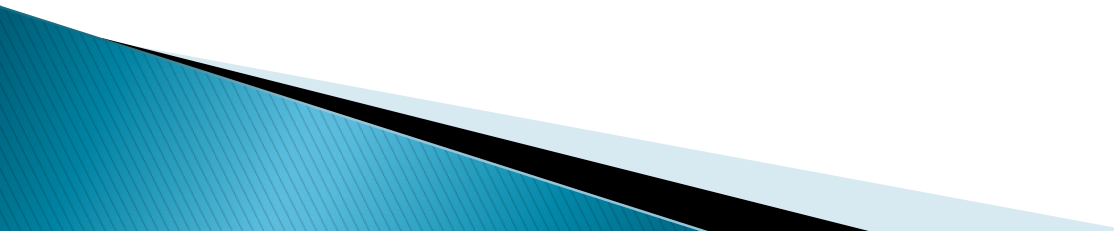
Methods

▶ Fluoro

- Low
- Medium
- High

▶ Cine

- Low
- Medium
- High

- When starting up the room, “Low” is the default setting
 - Whenever deemed necessary, Fluoro and/or Cine can be switched to “Medium” or “High”
 - Before starting the next procedure, “Low” is selected again
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Methods

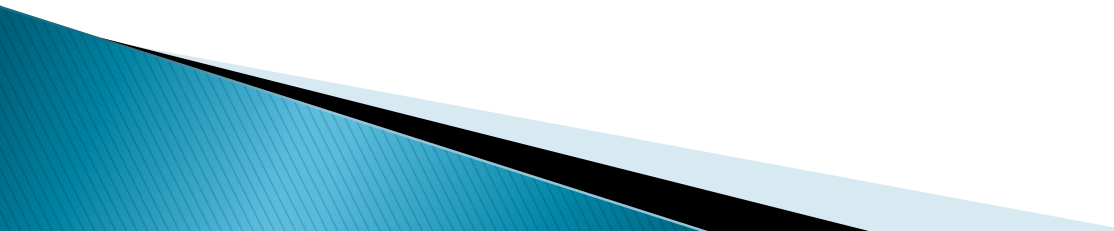
Dose–area–product (DAP)

and

Peak skin dose (PSD)

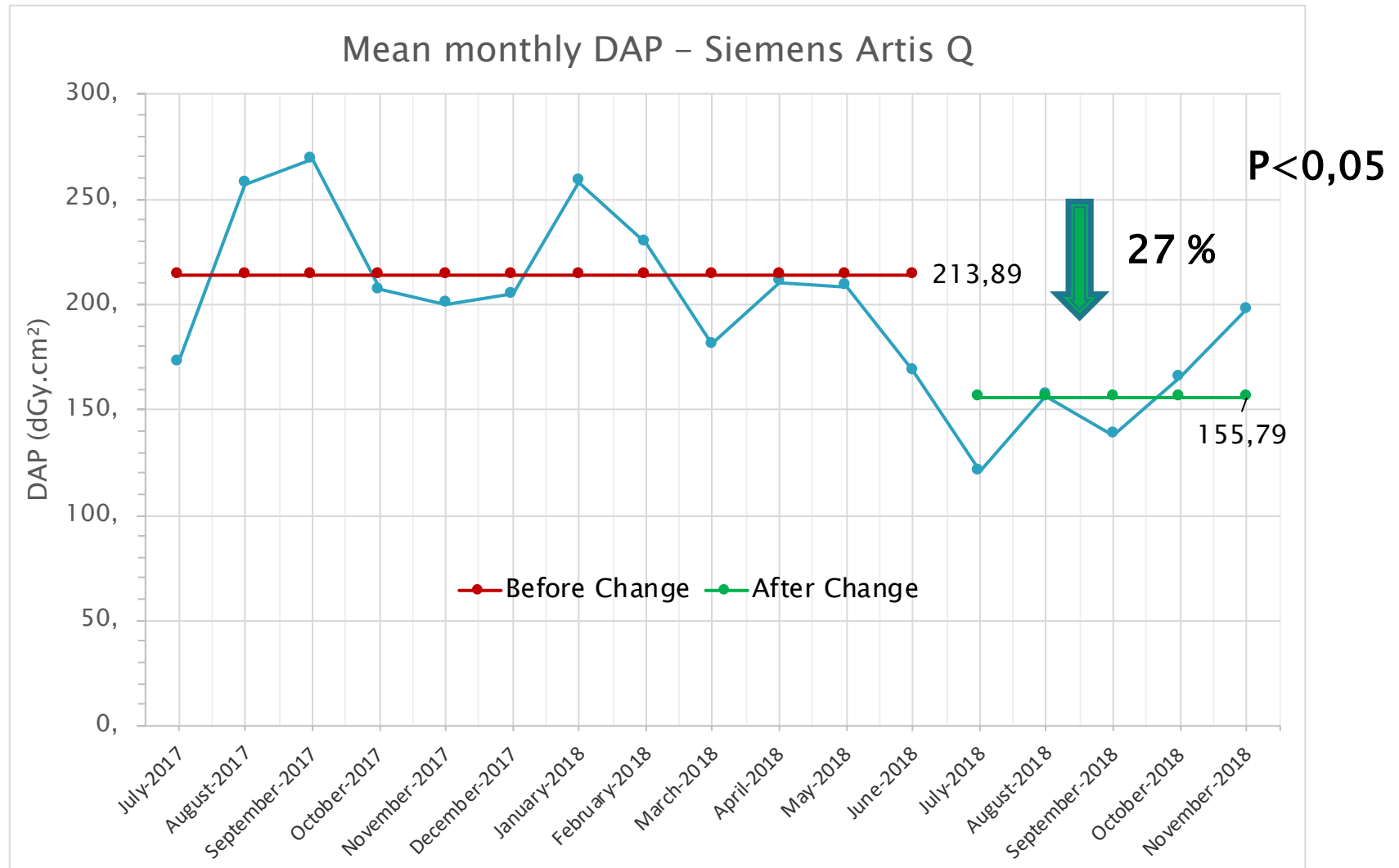
compared before and after the change (5 months FU)

using the dose monitoring platform DOSE (Qaelum NV)



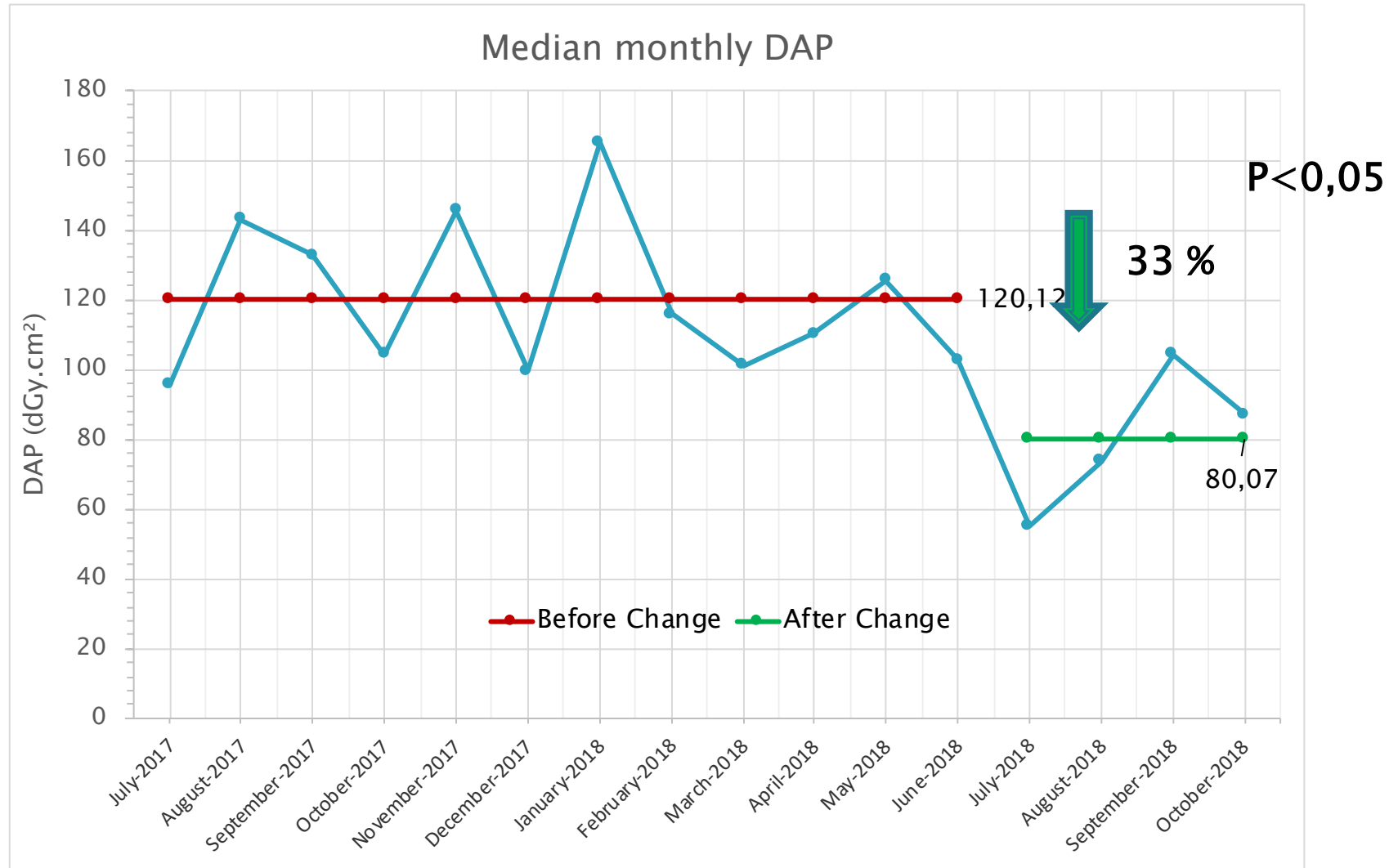
Results

Mean DAP room 3



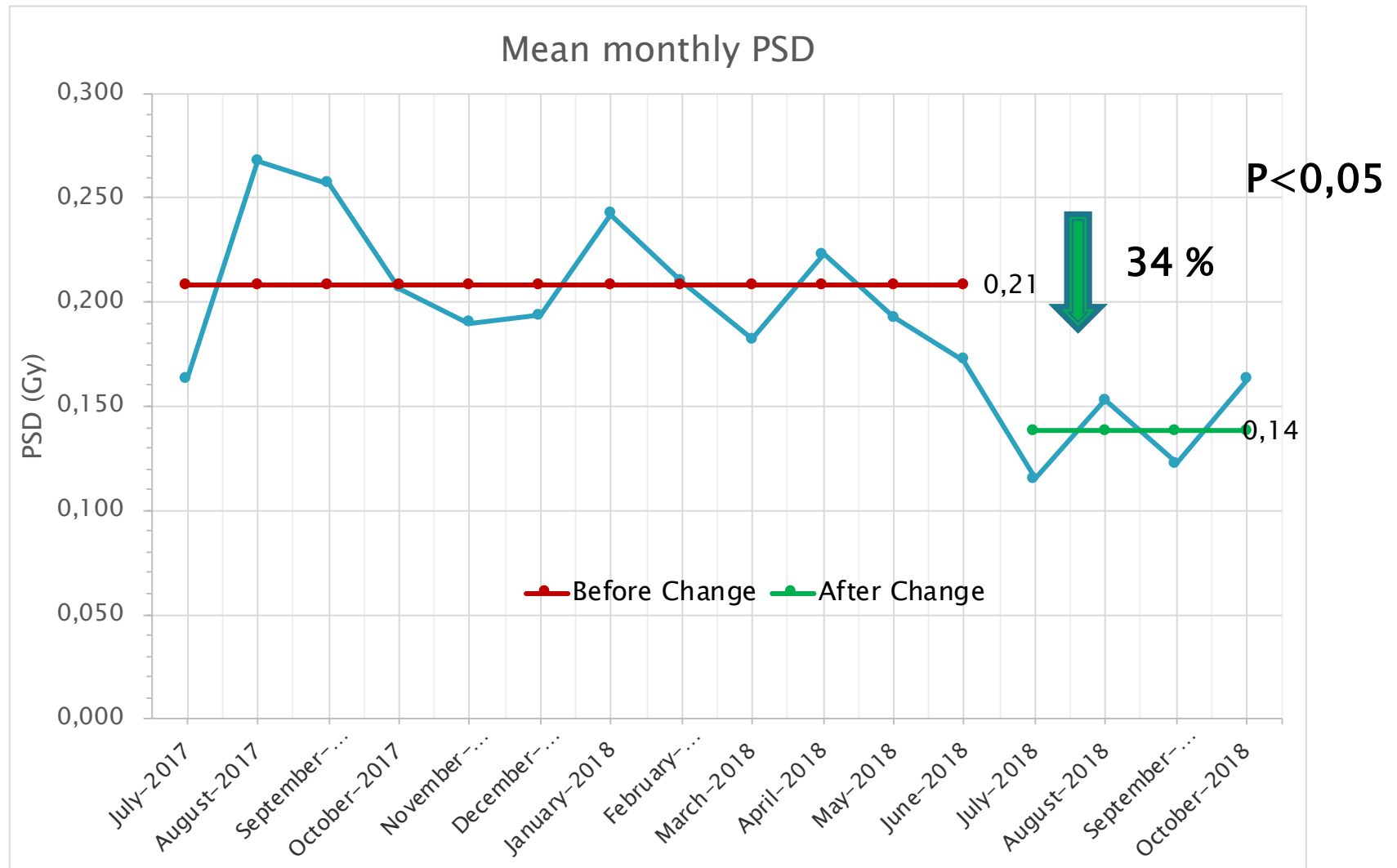
Results

Median DAP room 3



Results

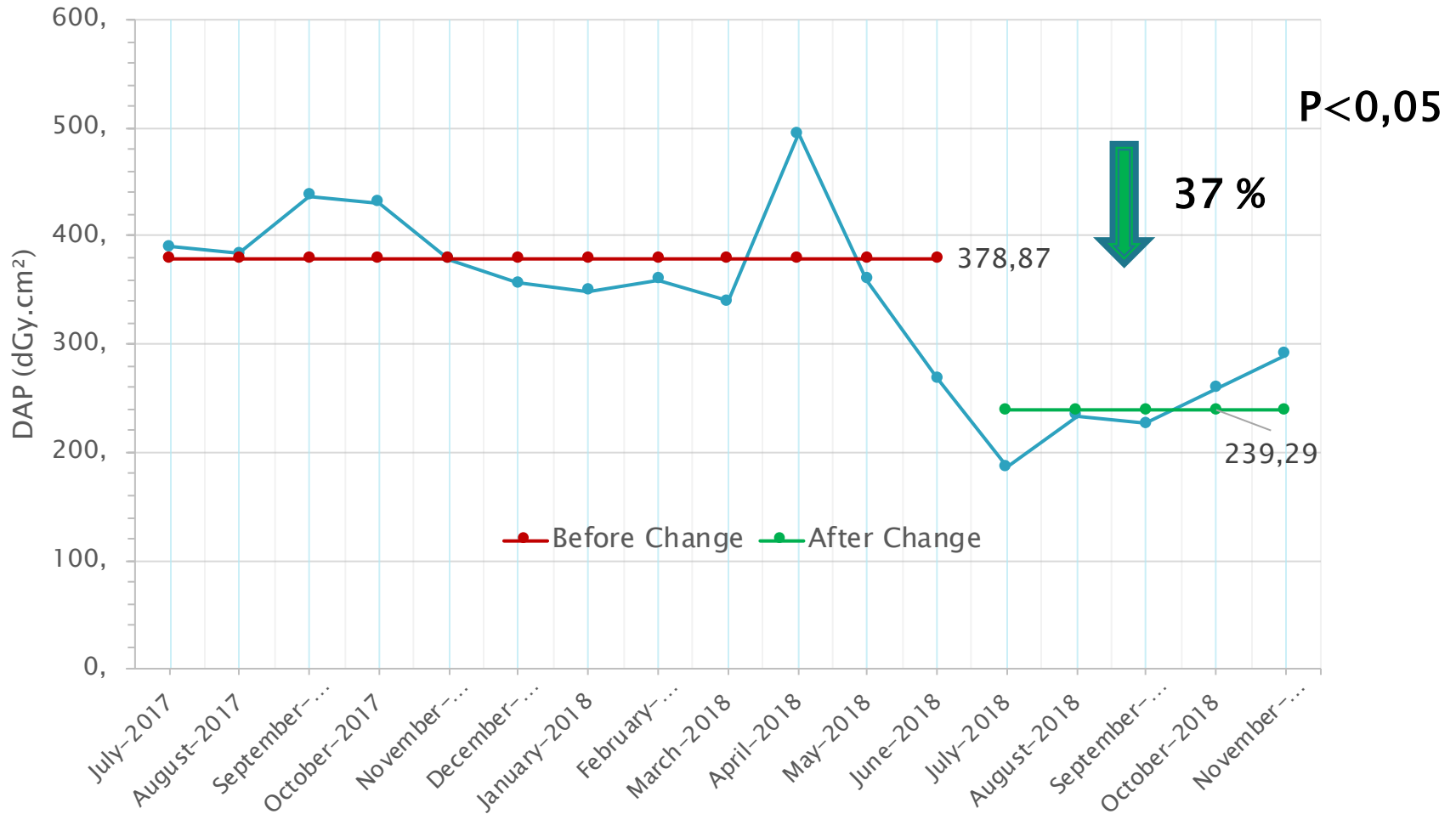
Mean PSD room 3



Results

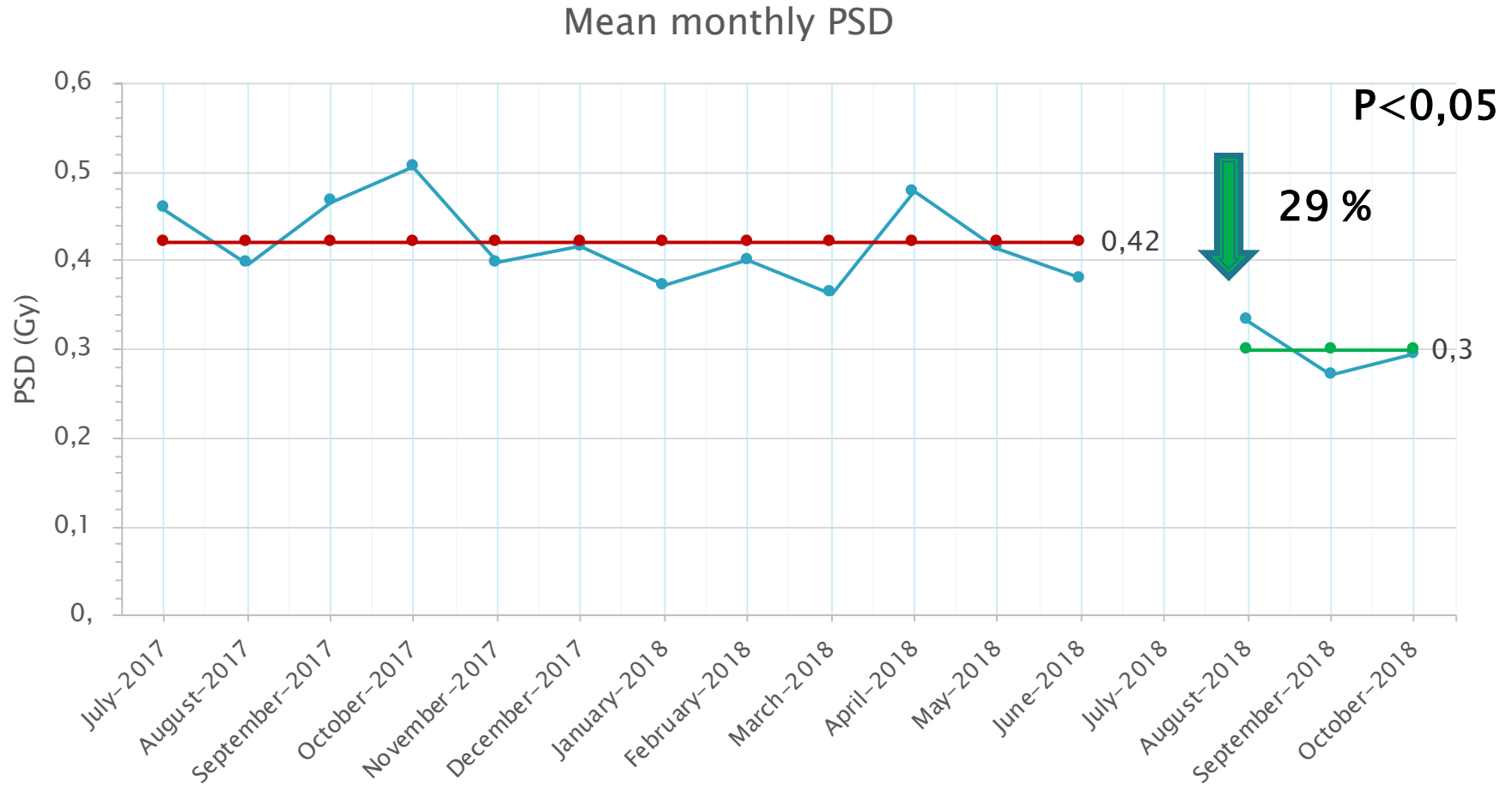
Mean DAP room 9

Mean monthly DAP – Siemens Axiom Artis dBC

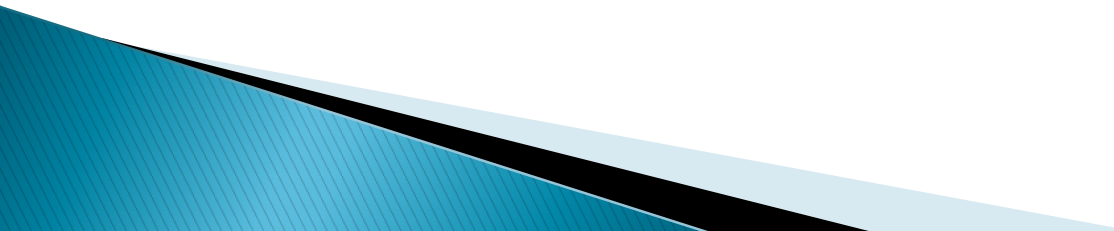


Results

Mean PSD room 9



Results

- No complaints about image quality
 - Average fluoroscopy times did not increase
 - Switch to medium dose:
 - Room 3: 2 % for fluoroscopy
5 % for acquisition
 - Room 9: 18 % for fluoroscopy
14 % for acquisition
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Conclusion

- ▶ Simple, easily implemented steps can lead to large reductions in patient dose
- ▶ Setting the default program to the low dose setting reduced the average patient DAP and PSD significantly, without having any noticeable effect on the clinical workflow



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