

Supplementary file 1.

Round 1. Questionnaires for Tutor Doctors (trainers) and Residents (trainees).

Tutor doctors

Demographic questions:

Age	
Years as a tutor doctor	
Postgraduate training region of Denmark	<input type="checkbox"/> North <input type="checkbox"/> South <input type="checkbox"/> East
Type of specialist practice	<input type="checkbox"/> Solo practice <input type="checkbox"/> Shared clinic

1. Please describe the educational environment in your otorhinolaryngology (ORL) specialist practice.
 - a. How much time do you spend supervising your resident on a weekly average (Including theoretical and practical education and feedback on skills and knowledge)

- b. Which types of educational resources are available to the residents in your ORL specialist practice? (e.g. supervision/mentorship, books, journals, electronic material, training models, simulators)?

- c. How do you train the residents in your ORL specialist practice (e.g. "see one, do one", direct observation with immediate or subsequent feedback)?

3. In your opinion, what are the weaknesses/barriers of the learning environment in your ORL specialist practice?

(list as many as you can. You may add additional rows)

1. Do you use structured competency assessment tools in evaluation of the residents in your ORL specialist practice?

(Please tick the box and elaborate).

Examples of validated tools: mini-CEX, OSATS, NOTSS. Examples of non-structured tools in this context are commonly used methods like clinical observation with feedback, use of logbooks, case presentations examinations? And the like)

Yes. Name the specific tools for structured assessment:

No. Describe how assessments are performed

2. What is your previous experience with and expectations to simulation-based training?

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3. Without any consideration of practical or economical barriers, please list all technical skills that you think could be supported by simulation training in your ORL specialist practice: (you may add rows if necessary)

In this context, technical skills are skills/procedures that involve patients and are a "hands-on skill" that demands practice. An example of a technical skill: Flexible fiberoptic rhinopharyngolaryngoscopy. An example of a non-technical skill: being able to use the electronic patient chart.

Residents

Demographic questions:

Age	
Number of years and months of otolaryngological (ORL) experience	
Number of month since you ended your employment in the ORL specialist practice	
Postgraduate training region of Denmark	<input type="checkbox"/> North <input type="checkbox"/> South <input type="checkbox"/> East
Type of practice	<input type="checkbox"/> Solo practice <input type="checkbox"/> Shared practice

1. Please describe the educational environment during your employment in the ORL specialist practice

- a. What was the average time of supervision per week (Including theoretical and practical education and feedback on skills and knowledge)

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- b. Which types of educational resources were available during your employment in the ORL specialist practice (e.g. supervision/mentorship, books, journals, electronic material, training models, simulators)?

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- c. How were you trained during your employment in the ORL specialist practice (e.g. "see one, do one", direct observation with immediate or subsequent feedback)?

3. In your opinion, what were the weaknesses/barriers of the learning environment during your employment at the ORL specialist practice?

(List as many as you can. You may add additional rows)

4. Were you subject to the use of validated structured competency assessment tools during your employment in the ORL specialist practice?

(Please tick the box and elaborate).

Examples of validated tools: mini-CEX, OSATS, NOTSS. Examples of non-structured tools in this context are commonly used methods like clinical observation with feedback, use of logbooks, case presentations/examinations and the like)

Yes. Name the specific tools for structured assessment:

No. Describe how assessments were performed

5. What is your previous experience with and expectations to simulation-based training?

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6. Without any consideration of practical or economical barriers, please list all technical skills that you think could be supported by simulation training during the employment at the ORL specialist practice: (you may add rows if necessary)

In this context, technical skills are skills/procedures that involve patients and is a "hands-on skill" that demands practice. An example of a technical skill: Flexible fiberoptic rhinopharyngolaryngoscopy. An example of a non-technical skill: being able to use the electronic patient charts.

Thank you very much for your participation.

4. Biopsy in the rhinopharynx																
5. Bronchoscopy																
6. Diagnostic ultrasound examination of the head and neck																
7. Direct laryngoscopy																
Procedure/technical skill	1. How often is the procedure performed in your ORL specialist practice?					2. How important would it be for a consult or a surgical procedure that the resident can perform the procedure quickly (given that the procedure is performed safely)?					3. This procedure would be very unpleasant or dangerous if trained on a patient.					Comments
	Never	Annually	Monthly	Weekly	Daily	Not at all	A little	Some	Much	Very much	Strongly disagree	Disagree	Neither/neutral	Agree	Strongly agree	
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	
8. Dix-Hallpike's manoeuvre																
9. Endoscopic guided removal of nasal polyps																
10. Functional endoscopic sinus surgery (FESS)																
11. Removal of atheroma																
12. Removal of mucocele																

13. Removal of polyp with snare																
14. Flexible fiberoptic rhino-pharyngo-laryngoscopy																
15. Fine needle aspiration (not ultrasound-guided)																
16. Fine Needle Aspiration (Ultrasound guided)																
17. Gastroscopy																
18. Core Needle Biopsy																
19. Insertion of tube in maxillary sinus																
Procedure/technical skill	1. How often is the procedure performed in your ORL specialist practice?					2. How important would it be for a consult or a surgical procedure that the resident can perform the procedure quickly (given that the procedure is performed safely)?					3. This procedure would be very unpleasant or dangerous if trained on a patient.					Comments
	Never	Annually	Monthly	Weekly	Daily	Not at all	A little	Some	Much	Very much	Strongly disagree	Disagree	Neither/neutral	Agree	Strongly agree	
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	
20. Puncture of the maxillary sinus																

21. Lingual frenectomy																
22. Lip biopsy																
23. Spirometry																
24. Local anaesthesia for tubulation and myringotomy																
25. Nasal packing																
26. Ear wick installation																
27. Myringoplasty																
28. Myringoplasty with rice paper																
29. Cleaning of radical cavity																
30. Otomicroscopy																
31. Otoscopy																
Procedure/technical skill	1. How often is the procedure performed in your ORL specialist practice?					2. How important would it be for a consult or a surgical procedure that the resident can perform the procedure quickly (given that the procedure is performed safely)?					3. This procedure would be very unpleasant or dangerous if trained on a patient.					Comments

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	Never	Annually	Monthly	Weekly	Daily	Not at all	A little	Some	Much	Very much	Strongly disagree	Disagree	Neither/neutral	Agree	Strongly agree	
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	
44. Tympanometry																
45. Video Head Impulse Test (vHIT)																
46. Videonystagmography (VNG)																

Residents

Dear resident,

Thank you very much for your answers in the first round. We have collected all answers and in this table, we present all mentioned procedures/technical skills.

In the following table, we ask you to evaluate/answer three questions/statements for each procedure mentioned

If the procedure was not performed in the otorhinolaryngology (ORL) specialist practice where you were employed (question one), questions two and three can be disregarded.

Procedure/technical skill	1. How often was the procedure performed in the ORL specialist practice?					2. How important would it be for a consult or a surgical procedure that you as a resident can perform the procedure quickly (given that the procedure is performed safely)?					3. This procedure would be very unpleasant or dangerous if trained on a patient.					Comments
	Never	Annually	Monthly	Weekly	Daily	Not at all	A little	Some	Much	Very much	Strongly disagree	Disagree	Neither/neutral	Agree	Strongly agree	
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	
1. Adenoidectomy																
2. Basal surgical skills (incisions, sutures, knots)																
3. Nasal biopsy																
4. Biopsy in the rhinopharynx																
5. Bronchoscopy																
6. Diagnostic ultrasound examination of the head and neck																

7. Direct laryngoscopy																
Procedure/technical skill	1. How often was the procedure performed in the ORL specialist practice?					2. How important would it be for a consult or a surgical procedure that you as a resident can perform the procedure quickly (given that the procedure is performed safely)?					3. This procedure would be very unpleasant or dangerous if trained on a patient.					Comments
	Never	Annually	Monthly	Weekly	Daily	Not at all	A little	Some	Much	Very much	Strongly disagree	Disagree	Neither/neutral	Agree	Strongly agree	
8. Dix-Hallpike's manoeuvre	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	
9. Endoscopic guided removal of nasal polyps																
10. Functional endoscopic sinus surgery (FESS)																
11. Removal of atheroma																
12. Removal of mucocele																
13. Removal of polyp with snare																
14. Flexible fiberoptic rhino-pharyngo-laryngoscopy																

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Procedure/technical skill	1. How often was the procedure performed in the ORL specialist practice?					2. How important would it be for a consult or a surgical procedure that you as a resident can perform the procedure quickly (given that the procedure is performed safely)?					3. This procedure would be very unpleasant or dangerous if trained on a patient.					Comments
	Never	Annually	Monthly	Weekly	Daily	Not at all	A little	Some	Much	Very much	Strongly disagree	Disagree	Neither/neutral	Agree	Strongly agree	
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	
20. Puncture of the maxillary sinus																
21. Lingual frenectomy																
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Procedure/technical skill	1. How often was the procedure performed in the ORL specialist practice?					2. How important would it be for a consult or a surgical procedure that you as a resident can perform the procedure quickly (given that the procedure is performed safely)?					3. This procedure would be very unpleasant or dangerous if trained on a patient.					Comments
	Never	Annually	Monthly	Weekly	Daily	Not at all	A little	Some	Much	Very much	Strongly disagree	Disagree	Neither/neutral	Agree	Strongly agree	
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	

32. Myringotomy																
33. Proetz suction																
34. Reposition in BPPV																
35. Rhinoscopy																
36. Robot surgery																
37. Septoplasty																
38. Stroboscopy																
39. Temporal artery biopsy																
40. Tonsillectomy																
41. Tonsillotomy																
42. Tracheotomy																
43. Insertion of ventilation tubes																
Procedure/technical skill	1. How often was the procedure performed in the ORL specialist practice?					2. How important would it be for a consult or a surgical procedure that you as a resident can perform the procedure quickly (given that the procedure is performed safely)?					3. This procedure would be very unpleasant or dangerous if trained on a patient.					Comments

Supplementary file 3

Round 3

* INSTRUCTION

1: Step one: Which procedures and technical skills from the list can in your opinion be trained safely in the clinic and do NOT need to be trained by simulation?

Start by reviewing the list and remove all procedures/technical skills, that in your opinion do not need to be trained by simulation, by checking the “Not relevant” box. This can also be procedures that can or should be learned in another part of the specialist training, and not during employment in the otorhinolaryngology (ORL) specialist practice.

2. Step two: Of the remaining procedures/technical skills, which are most important to train by simulation in an ORL specialist practice?

Re-prioritize the remaining procedures/technical skills by using the ”drag and drop” function. This way, you can prioritize procedures/technical skills that you believe to be important to train by simulation and downgrade procedures/technical skills that you believe to be less important to train by simulation.

Rank	Procedure/technical skill	Not Relevant
	Flexible fiberoptic rhino-pharyngo-laryngoscopy	
	Otomicroscopy	
	Myringotomy	
	Basal surgical skills (incisions, sutures, knots)	
	Insertion of ventilation tubes	
	Ear wick installation	
	Tympanometry	

	Dix-Hallpike's manoeuvre	
	Fine Needle Aspiration (Ultrasound guided)	
	Diagnostic ultrasound examination of the head and neck	
	Reposition in BPPV	
	Rhinoscopy	
	Nasal packing	
	Cleaning of radical cavity	
	Lingual frenectomy	
	Local anaesthesia for tubulation and myringotomy	
	Stroboscopy	
	Video Head Impulse Test (vHIT)	
	Otoscopy	
	Nasal biopsy	
	Removal of atheroma	
	Lip biopsy	
	Myringoplasty with rice paper	
	Removal of mucocele	
	Fine Needle Aspiration (without ultrasound guide)	

	Tonsillotomy	
	Spirometry	
	Videonystagmography (VNG)	
	Biopsy in the rhinopharynx	
	Endoscopic guided removal of nasal polyps	
	Adenoidectomy	
	Removal of polyp with snare	
	Tonsillectomy	
	Puncture of maxillary sinus	
	Direct laryngoscopy	
	Insertion of tube in maxillary sinus	