

**Telepharmacy versus Face-to-Face Approach in Providing Inhaler Technique Training Service: A Non-inferiority Assessment Among German Pharmacy Students**

**Supplementary Materials**

**Supplementary material S1. Analytical Checklist for Inhaler type Aerosol**

Participant code: \_\_\_\_\_ Date: \_\_\_\_\_ Examiner: \_\_\_\_\_

OSCE-Nr. \_\_\_\_ Communication medium: Face-2-Face  Telepharmacy

<b>OSCE Checklist (Aerosol)</b>			
<b>Steps to be carried out and checked</b>	<b>Fulfilled</b>	<b>Not fulfilled</b>	<b>Remarks</b>
<b>Station 1: General Preparation and Introduction (5 P.)</b>			
1.1 The examinee greets and identifies the patient.			
1.2 The examinee checks whether the patient is eligible for the clinical pharmacy service (Inhaler technique training). <ul style="list-style-type: none"> <li>• <i>Newly prescribed</i></li> <li>• <i>Device change</i></li> <li>• <i>Last training ≥ 1 year ago and no participation in the Disease-Management-Programm (DMP)</i></li> </ul>			
1.3 The examinee obtains the patient's consent.			
1.4 The examinee explains the stepwise procedure.			
1.5 The examinee explains the importance of the correct inhaler technique.			
<b>Station 2: Inhaler technique demonstration and practice (13 P.)</b>			
The examinee instructs the patient by demonstrating how to.....	<b>Fulfilled</b>	<b>Not fulfilled</b>	<b>Remarks</b>
2.1 ... verify the condition of the inhaler (Functionality, completeness, cleanliness).			
2.2 ... shake the inhaler.			
2.3 ... remove the cap of the inhaler.			
2.4 ... hold the device and maintain body posture in the correct position (standing or sitting straight).			
2.5 ... exhale completely sideways.			
2.6 ... Put the mouthpiece between teeth, close the lips to form a good seal, and keep the head upright.			
2.7 ... press the canister and inhale at the same time.			
2.8 ... inhale slowly and deeply.			
2.9 ... hold breath for 5-10 seconds after inhalation.			
2.10 ... slowly exhale from the mouth or nose and away from the mouthpiece.			
2.11 ... close the device with the cap.			

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2.12 The examinee provides additional information (rinsing mouth, brushing teeth, drinking water, repeating all the steps in case of an additional dose, and storage of the device).			
2.13 The examinee asks the patient to demonstrate all the steps.			
<b>Station 3: Communication skills, critical error identification &amp; documentation (8 P.)</b>			
	Fulfilled	Not fulfilled	Remarks
3.1 The examinee maintains sufficient eye contact during the counseling session.			
3.2 The examinee pays attention to appropriate non-verbal communication (gestures, facial expressions, etc.).			
3.3 The examinee pays attention to comprehensible expression.			
3.4 The examinee ensures the patient's understanding.			
3.5 The examinee remains attentive during the inhaler technique demonstration by the patient.			
3.6 The examinee responds to critical inhaler technique errors made by the patient. <ul style="list-style-type: none"> <li>• <i>Not shaking the inhaler.</i></li> <li>• <i>Not holding breath.</i></li> </ul>			
3.7 The examinee responds to the patient's questions.			
3.8 The examinee completes the necessary documentation.			

**Supplementary material S2. Analytical Checklist for Inhaler type Breezhaler**

Participant code: \_\_\_\_\_ Date: \_\_\_\_\_ Examiner: \_\_\_\_\_

OSCE-Nr. \_\_\_\_ Communication medium: Face-2-Face  Telepharmacy

<b>OSCE Checklist (Breezhaler)</b>			
<b>Steps to be carried out and checked</b>	Fulfilled	Not fulfilled	Remarks
<b>Station 1: General Preparation and Introduction (5 P.)</b>			
1.1 The examinee greets and identifies the patient.			
1.2 The examinee checks whether the patient is eligible for the clinical pharmacy service (Inhaler technique training). <ul style="list-style-type: none"> <li>• <i>Newly prescribed</i></li> <li>• <i>Device change</i></li> </ul>			

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<ul style="list-style-type: none"> <li><i>Last training ≥ 1 year ago and no participation in the Disease-Management-Programm (DMP)</i></li> </ul>			
1.3 The examinee obtains the patient's consent.			
1.4 The examinee explains the stepwise procedure.			
1.5 The examinee explains the importance of the correct inhaler technique.			
<b>Station 2: Inhaler technique demonstration and practice (13 P.)</b>			
The examinee instructs the patient by demonstrating how to.....	Fulfilled	Not fulfilled	Remarks
2.1 ... verify the condition of the inhaler (Functionality, completeness, cleanliness).			
2.2 ... remove the cap of the inhaler.			
2.3 ... set the device ready for use (insert capsule).			
2.4...Prepare the dose by piercing the capsule.			
2.5 ...hold the device and maintain body posture in the correct position (standing or sitting straight).			
2.6 ... exhale completely sideways.			
2.7 ... Put the mouthpiece between the teeth, close the lips to form a good seal, and keep the head upright.			
2.8 ... Inhale deeply and rapidly			
2.9 ... hold breath for 5-10 seconds after inhalation.			
2.10 ... slowly exhale from the mouth or nose and away from the mouthpiece.			
2.11 ... Remove the capsule and close the device.			
2.12 The examinee provides additional information (rinsing mouth, brushing teeth, drinking water, repeating all the steps in case of an additional dose, and storage of the device).			
2.13 The examinee asks the patient to demonstrate all the steps.			
<b>Station 3: Communication skills, critical error identification &amp; documentation (8 P.)</b>			
	Fulfilled	Not fulfilled	Remarks
3.1 The examinee maintains sufficient eye contact during the counseling session.			
3.2 The examinee pays attention to appropriate non-verbal communication (gestures, facial expressions, etc.).			
3.3 The examinee pays attention to comprehensible expression.			

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3.4 The examinee ensures the patient's understanding.			
3.5 The examinee remains attentive during the inhaler technique demonstration by the patient.			
3.6 The examinee responds to critical inhaler technique errors made by the patient. <ul style="list-style-type: none"> <li>• Not "filling" the Breezhaler with the medication capsule or pressing the side buttons.</li> <li>• Exhalation into the device.</li> </ul>			
3.7 The examinee responds to the patient's questions.			
3.8 The examinee completes the necessary documentation.			

**Supplementary material S3. Analytical Checklist for Inhaler type Autohaler**

Participant code: \_\_\_\_\_ Date: \_\_\_\_\_ Examiner: \_\_\_\_\_

OSCE-Nr. \_\_\_\_ Communication medium: Face-2-Face  Telepharmacy

<b>OSCE Checklist (Autohaler)</b>			
<b>Steps to be carried out and checked</b>	<b>Fulfilled</b>	<b>Not fulfilled</b>	<b>Remarks</b>
<b>Station 1: General Preparation and Introduction (5 P.)</b>			
1.1 The examinee greets and identifies the patient.			
1.2 The examinee checks whether the patient is eligible for the clinical pharmacy service (Inhaler technique training). <ul style="list-style-type: none"> <li>• <i>Newly prescribed</i></li> <li>• <i>Device change</i></li> <li>• <i>Last training ≥ 1 year ago and no participation in the Disease-Management-Programm (DMP)</i></li> </ul>			
1.3 The examinee obtains the patient's consent.			
1.4 The examinee explains the stepwise procedure.			
1.5 The examinee explains the importance of the correct inhaler technique.			
<b>Station 2: Inhaler technique demonstration and practice (14 P.)</b>			
The examinee instructs the patient by demonstrating how to.....	<b>Fulfilled</b>	<b>Not fulfilled</b>	<b>Remarks</b>
2.1 ... verify the condition of the inhaler (Functionality, completeness, cleanliness).			
2.2 ... shake the inhaler.			
2.3 ... remove the cap of the inhaler.			

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2.4 ... set the inhaler ready for use (push lever up).			
2.5 ... hold the device and maintain body posture in the correct position (standing or sitting straight).			
2.6 ... exhale completely sideways.			
2.7 ... Put the mouthpiece between teeth, close the lips to form a good seal, and keep the head upright.			
2.8 ... activate the spray by inhalation and keep breathing in after the click is heard			
2.9 ... Inhale slowly, deeply, and for a long time.			
2.10 ... hold breath for 5-10 seconds after inhalation.			
2.11 ... slowly exhale from the mouth or nose and away from the mouthpiece.			
2.12 ... push the lever down and close the device with the cap.			
2.13 The examinee provides additional information (rinsing mouth, brushing teeth, drinking water, repeating all steps in case of an additional dose, and storage of the device).			
2.14 The examinee asks the patient to demonstrate all the steps.			
<b>Station 3: Communication skills, critical error identification &amp; documentation (8 P.)</b>			
	Fulfilled	Not fulfilled	Remarks
3.1 The examinee maintains sufficient eye contact during the counseling session.			
3.2 The examinee pays attention to appropriate non-verbal communication (gestures, facial expressions, etc.).			
3.3 The examinee pays attention to comprehensible expression.			
3.4 The examinee ensures the patient's understanding.			
3.5 The examinee remains attentive during the inhaler technique demonstration by the patient.			
3.6 The examinee responds to critical inhaler technique errors made by the patient. <ul style="list-style-type: none"> <li>• <i>Not shaking the Autohaler.</i></li> <li>• <i>Not holding breath.</i></li> </ul>			
3.7 The examinee responds to the patient's questions.			
3.8 The examinee completes the necessary documentation.			

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**Supplementary material S4. Analytical Checklist for Inhaler type Diskus**

Participant code: \_\_\_\_\_ Date: \_\_\_\_\_ Examiner: \_\_\_\_\_

OSCE-Nr. \_\_\_\_ Communication medium: Face-2-Face  Telepharmacy

<b>OSCE Checklist (Diskus)</b>			
<b>Steps to be carried out and checked</b>	<b>Fulfilled</b>	<b>Not fulfilled</b>	<b>Remarks</b>
<b>Station 1: General Preparation and Introduction (5 P.)</b>			
1.1 The examinee greets and identifies the patient.			
1.2 The examinee checks whether the patient is eligible for the clinical pharmacy service (Inhaler technique training). <ul style="list-style-type: none"> <li>• <i>Newly prescribed</i></li> <li>• <i>Device change</i></li> <li>• <i>Last training ≥ 1 year ago and no participation in the Disease-Management-Programm (DMP)</i></li> </ul>			
1.3 The examinee obtains the patient's consent.			
1.4 The examinee explains the stepwise procedure.			
1.5 The examinee explains the importance of the correct inhaler technique.			
<b>Station 2: Inhaler technique demonstration and practice (12 P.)</b>			
The examinee instructs the patient by demonstrating how to.....	<b>Fulfilled</b>	<b>Not fulfilled</b>	<b>Remarks</b>
2.1 ... verify the condition of the inhaler (Functionality, completeness, cleanliness).			
2.2 ... remove the cap of the inhaler.			
2.3 ... set the device ready for use (loading by pressing the lever).			
2.4 ... hold the device and maintain body posture in the correct position (standing or sitting straight).			
2.5 ... exhale completely sideways.			
2.6 ... Put the mouthpiece between the teeth, close the lips to form a good seal, and keep the head upright.			
2.7 ... Inhale deeply and rapidly			
2.8 ... hold breath for 5-10 seconds after inhalation.			
2.9 ... slowly exhale from the mouth or nose and away from the mouthpiece.			
2.10 ... close the device.			

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2.11 The examinee provides additional information (rinsing mouth, brushing teeth, drinking water, repeating all the steps in case of an additional dose, and storage of the device).			
2.12 The examinee asks the patient to demonstrate all the steps.			
<b>Station 3: Communication skills, critical error identification &amp; documentation (8 P.)</b>			
	Fulfilled	Not fulfilled	Remarks
3.1 The examinee maintains sufficient eye contact during the counseling session.			
3.2 The examinee pays attention to appropriate non-verbal communication (gestures, facial expressions, etc.).			
3.3 The examinee pays attention to comprehensible expression.			
3.4 The examinee ensures the patient's understanding.			
3.5 The examinee remains attentive during the inhaler technique demonstration by the patient.			
3.6 The examinee responds to critical inhaler technique errors made by the patient. <ul style="list-style-type: none"> <li>• No "loading" of the diskus.</li> <li>• Exhale into the device.</li> </ul>			
3.7 The examinee responds to the patient's questions.			
3.8 The examinee completes the necessary documentation.			

**Supplementary material S5. Analytical Checklist for Inhaler type Elpenhaler**

Participant code: \_\_\_\_\_ Date: \_\_\_\_\_ Examiner: \_\_\_\_\_

OSCE-Nr. \_\_\_\_ Communication medium: Face-2-Face  Telepharmacy

<b>OSCE Checklist (Elpenhaler)</b>			
<b>Steps to be carried out and checked</b>	Fulfilled	Not fulfilled	Remarks
<b>Station 1: General Preparation and Introduction (5 P.)</b>			
1.1 The examinee greets and identifies the patient.			
1.2 The examinee checks whether the patient is eligible for the clinical pharmacy service (Inhaler technique training). <ul style="list-style-type: none"> <li>• <i>Newly prescribed</i></li> <li>• <i>Device change</i></li> </ul>			

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<ul style="list-style-type: none"> <li><i>Last training ≥ 1 year ago and no participation in the Disease-Management-Programm (DMP)</i></li> </ul>			
1.3 The examinee obtains the patient's consent.			
1.4 The examinee explains the stepwise procedure.			
1.5 The examinee explains the importance of the correct inhaler technique.			
<b>Station 2: Inhaler technique demonstration and practice (13 P.)</b>			
The examinee instructs the patient by demonstrating how to.....	Fulfilled	Not fulfilled	Remarks
2.1 ... verify the condition of the inhaler (Functionality, completeness, cleanliness).			
2.2 ... remove the cap of the inhaler.			
2.3 ... set the device ready for use (Take out the blister from the package and insert it correctly into the device).			
2.4...Prepare the dose by pulling off the overhanging end.			
2.5 ...hold the device and maintain body posture in the correct position (standing or sitting straight).			
2.6 ... exhale completely sideways.			
2.7 ... Put the mouthpiece between the teeth, close the lips to form a good seal, and keep the head upright.			
2.8 ... Inhale deeply and rapidly			
2.9 ... hold breath for 5-10 seconds after inhalation.			
2.10 ... slowly exhale from the mouth or nose and away from the mouthpiece.			
2.11 ... remove the empty blister and close the device.			
2.12 The examinee provides additional information (rinsing mouth, brushing teeth, drinking water, repeating all the steps in case of an additional dose, and storage of the device).			
2.13 The examinee asks the patient to demonstrate all the steps.			
<b>Station 3: Communication skills, critical error identification &amp; documentation (8 P.)</b>			
	Fulfilled	Not fulfilled	Remarks
3.1 The examinee maintains sufficient eye contact during the counseling session.			
3.2 The examinee pays attention to appropriate non-verbal communication (gestures, facial expressions, etc.).			

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3.3 The examinee pays attention to comprehensible expression.			
3.4 The examinee ensures the patient's understanding.			
3.5 The examinee remains attentive during the inhaler technique demonstration by the patient.			
3.6 The examinee responds to critical inhaler technique errors made by the patient. <ul style="list-style-type: none"> <li>• Exhaling into the device.</li> <li>• Not holding breath.</li> </ul>			
3.7 The examinee responds to the patient's questions.			
3.8 The examinee completes the necessary documentation.			

**Supplementary material S6. Analytical Checklist for Inhaler type Novolizer**

Participant code: \_\_\_\_\_ Date: \_\_\_\_\_ Examiner: \_\_\_\_\_

OSCE-Nr. \_\_\_\_ Communication medium: Face-2-Face  Telepharmacy

<b>OSCE Checklist (Novolizer)</b>			
<b>Steps to be carried out and checked</b>	<b>Fulfilled</b>	<b>Not fulfilled</b>	<b>Remarks</b>
<b>Station 1: General Preparation and Introduction (5 P.)</b>			
1.1 The examinee greets and identifies the patient.			
1.2 The examinee checks whether the patient is eligible for the clinical pharmacy service (Inhaler technique training). <ul style="list-style-type: none"> <li>• <i>Newly prescribed</i></li> <li>• <i>Device change</i></li> <li>• <i>Last training ≥ 1 year ago and no participation in the Disease-Management-Programm (DMP)</i></li> </ul>			
1.3 The examinee obtains the patient's consent.			
1.4 The examinee explains the stepwise procedure.			
1.5 The examinee explains the importance of the correct inhaler technique.			
<b>Station 2: Inhaler technique demonstration and practice (12 P.)</b>			
The examinee instructs the patient by demonstrating how to.....	<b>Fulfilled</b>	<b>Not fulfilled</b>	<b>Remarks</b>
2.1 ... verify the condition of the inhaler (Functionality, completeness, cleanliness).			
2.2 ... remove the cap of the inhaler.			

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2.3 ... set the device ready for use (press the lever down until it clicks).			
2.4 ...hold the device and maintain body posture in the correct position (standing or sitting straight).			
2.5 ... exhale completely sideways.			
2.6 ... Put the mouthpiece between the teeth, close the lips to form a good seal, and keep the head upright.			
2.7 ... Inhale deeply and rapidly, and for a long time			
2.8 ... hold breath for 5-10 seconds after inhalation.			
2.9 ... slowly exhale from the mouth or nose and away from the mouthpiece.			
2.10 ... close the device.			
2.11 The examinee provides additional information (rinsing mouth, brushing teeth, drinking water, repeating all the steps in case of an additional dose, and storage of the device).			
2.12 The examinee asks the patient to demonstrate all the steps.			
<b>Station 3: Communication skills, critical error identification &amp; documentation (8 P.)</b>			
	Fulfilled	Not fulfilled	Remarks
3.1 The examinee maintains sufficient eye contact during the counseling session.			
3.2 The examinee pays attention to appropriate non-verbal communication (gestures, facial expressions, etc.).			
3.3 The examinee pays attention to comprehensible expression.			
3.4 The examinee ensures the patient's understanding.			
3.5 The examinee remains attentive during the inhaler technique demonstration by the patient.			
3.6 The examinee responds to critical inhaler technique errors made by the patient. <ul style="list-style-type: none"> <li>• Shaking the Novolizer.</li> <li>• Not "loading" the Novolizer.</li> </ul>			
3.7 The examinee responds to the patient's questions.			
3.8 The examinee completes the necessary documentation.			

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**Supplementary Table 1. Responses to the perception survey**

<b>Statements</b>	<b>% Agreement</b>	<b>% Disagreement</b>	<b>Mean (SD)</b>	<b>Median</b>
I see Telepharmacy as another option for patient consultations in the future.	100	0	5.25 (0.75)	5
Telepharmacy consultation is time-consuming.	20.5	79.5	2.72 (0.91)	3
Telepharmacy consultation is future-oriented.	92.3	7.7	4.74 (0.96)	5
Telepharmacy is a suitable approach for demonstrating and practicing the correct inhaler technique.	92.3	7.7	4.56 (0.88)	4
Telepharmacy is a good alternative to face-to-face consultations for demonstrating and practicing the correct inhaler technique.	82.1	17.9	4.38 (1.06)	4
I found the Telepharmacy approach more difficult than the face-to-face approach while providing inhaler technique training service.	51.3	48.7	3.64 (1.24)	4
I noticed a difference in my verbal communication (e.g. voice tone, volume, etc.) between the two simulation sessions.	82.1	17.9	4.28 (1.29)	5
I noticed a difference in my non-verbal communication (e.g. eye contact, body language, etc.) between the two simulation sessions.	69.2	30.8	4.53 (1.07)	5
I noticed a difference in patient interaction between the two simulation sessions.	64.1	35.9	4.10 (1.33)	4
The simulation gave me an insight into telepharmacy consultations.	100	0	5.20 (0.65)	5

**Note:** Responses were rated on a six-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = rather disagree, 4 = rather agree, 5 = agree, 6 = strongly agree); strongly disagree, disagree and rather disagree= disagreement; rather agree, agree, and strongly agree= Agreement.