

FATE-Protocol: Case

Case: You are a resident doctor in the emergency department of the university hospital. A 72-year old patient presents with shortness of breath and mild chest pain. You initially perform an ECG. For further assessment, you would like to carry out a focused cardiac ultrasound examination.

Task 1: Guide the patient through the ultrasound examination (**please ask the participants on the simulator specifically about this**)

Task 2 + 3: Correctly obtain the standard scan planes of the FATE protocol (including quality features, max. 90 seconds per plane), in order to get an overview of the heart function and possible underlying pathologies.

Freeze **each image**, show and name the key anatomical structures. Please do not take any measurements.

Tips for the examiners:

- **Time: 8 minutes.** Should the participants not manage to obtain the scan planes themselves, please provide assistance, in order for them to be able to perform Task 3 (alternatively, show pictures on the ultrasound machine/simulator). **Do not spend more than 90 seconds per scan plane!**
- Assess ultrasound scanning technique during the examination process at FATE 1 and again at the end: 6 evaluation criteria (orientation, positioning of the transducer, coupling, transducer manipulation, image optimization and operation of the device (ultrasound machine/simulator). 2 points per criterion (independent and confident), 1 point if verbal instructions are necessary, 0 points if assistance is required. Please make sure that your left hand is on the ultrasound machine/simulator (**Adjust the device before starting!!**).
- Attribute 2 points for issuing **breathing commands** (i.e. inhale, exhale, hold breath) and **positioning of the patient**, provided, that no instructions were given and the scan plane could be obtained correctly.
- Please add up the **points** only after the exam and **do not give the evaluation form away!**

The **evaluation form** contains three possible options for each task:

- **Green:** The examinee carries out the task completely correctly/optimally.
- **Yellow:** The examinee completes the task with some difficulty/with assistance from the examiner.
- **Red:** The examinee was unable to complete the tasks adequately, despite assistance from the examiner.

Test objectives:

- The examinee is proficient in handling the transducer and adjusting the image in relation to:
 - Orientation
 - Positioning of the transducer
 - Coupling
 - Image magnification and image optimization
- The examinee is able to guide the patient through the examination.
- The examinee can carry out the examination according to the guidelines with regard to:
 - ... obtaining **the scan planes of the FATE protocol**
 - ... **naming the key anatomical structures on each scan plane**
 - ... **explaining the images** on each plane respectively
 - ... **the overall performance**

Task sheet FATE-Protocol DOPS

Case: You are a resident doctor in the emergency department of the university hospital. A 72-year old patient presents with shortness of breath and mild chest pain. You initially perform an ECG. For further assessment, you would like to carry out a focused cardiac ultrasound examination.

Task 1: Guide the patient through the ultrasound examination **(please ask the participants on the simulator specifically about this)**

Task 2 + 3: Correctly obtain the standard scan planes of the FATE protocol (including quality features, max. 90 seconds per plane), in order to get an overview of the heart function and possible underlying pathologies.

Freeze **each image**, **show and name the key anatomical structures**. Please do not take any measurements.

Evaluation from FATE Protocol DOPS

Code:
Simulator <input type="checkbox"/> human model <input type="checkbox"/>
Examiner:

Task 1: Guide the patient through the ultrasound examination.

Patient confrontation/ Communication

The following should be taken into consideration: (please ask the participants on the simulator specifically about this)	Correct	Upon request	Not at all
▪ „Use ultrasound towels, put on gloves“	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
▪ „Ask the patient to undress the upper body“ + „Warn the patient for the ultrasound gel“	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
▪ Ask the patient to “lie down” + Warn the patient before applying light pressure during the examination	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>
▪ Pay attention to professional boundaries regarding intimate areas	2 <input type="checkbox"/>	1 <input type="checkbox"/>	0 <input type="checkbox"/>

Patient confrontation Points ____/8

Task 2+3: Correctly obtain the standard scan planes of the FATE protocol, including quality features (max. 90 seconds per plane). Freeze each image, show and name the key anatomical structures.

FATE 1

Tip for the examiner: Pay attention to orientation, positioning of the transducer, coupling, image optimization, proper machine handling

Correctly obtain the subcostal echocardiography view , including quality features:	Correctly demonstrate and name the following structures:																		
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">▪ The 4 cardiac chambers are visualized</td> <td style="text-align: center; padding: 2px;">2 <input type="checkbox"/></td> </tr> <tr> <td style="padding: 2px;">▪ The leaflets of the mitral and tricuspid valve are visualized</td> <td style="text-align: center; padding: 2px;">2 <input type="checkbox"/></td> </tr> <tr> <td style="padding: 2px;">▪ The liver and parts of the pericardium are visualized close to the transducer</td> <td style="text-align: center; padding: 2px;">2 <input type="checkbox"/></td> </tr> <tr> <td style="padding: 2px;">▪ Visualization possible only with assistance</td> <td style="text-align: center; padding: 2px;">2 <input type="checkbox"/></td> </tr> <tr> <td style="padding: 2px;">▪ Inadequate examination despite assistance</td> <td style="text-align: center; padding: 2px;">0 <input type="checkbox"/></td> </tr> </table>	▪ The 4 cardiac chambers are visualized	2 <input type="checkbox"/>	▪ The leaflets of the mitral and tricuspid valve are visualized	2 <input type="checkbox"/>	▪ The liver and parts of the pericardium are visualized close to the transducer	2 <input type="checkbox"/>	▪ Visualization possible only with assistance	2 <input type="checkbox"/>	▪ Inadequate examination despite assistance	0 <input type="checkbox"/>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Right atrium</td> <td style="text-align: center; padding: 2px;">0,5 <input type="checkbox"/></td> </tr> <tr> <td style="padding: 2px;">Right ventricle</td> <td style="text-align: center; padding: 2px;">0,5 <input type="checkbox"/></td> </tr> <tr> <td style="padding: 2px;">Left atrium</td> <td style="text-align: center; padding: 2px;">0,5 <input type="checkbox"/></td> </tr> <tr> <td style="padding: 2px;">Left ventricle</td> <td style="text-align: center; padding: 2px;">0,5 <input type="checkbox"/></td> </tr> </table>	Right atrium	0,5 <input type="checkbox"/>	Right ventricle	0,5 <input type="checkbox"/>	Left atrium	0,5 <input type="checkbox"/>	Left ventricle	0,5 <input type="checkbox"/>
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FATE 1 Points ____ / 8

Examiner's notes:

FATE 2

Tip for the examiner: Pay attention to orientation, positioning of the transducer, coupling, image optimization, proper machine handling

Correctly obtain the apical 4-chamber view of the heart , including quality features:		Correctly demonstrate and name the following structures:	
<ul style="list-style-type: none"> The 4 cardiac chambers are visualized 	2 <input type="checkbox"/>	R + L atrium	0,5 <input type="checkbox"/>
<ul style="list-style-type: none"> The septum is demonstrated vertically 	2 <input type="checkbox"/>	R + L ventricle	0,5 <input type="checkbox"/>
<ul style="list-style-type: none"> The mitral and tricuspid valve are demonstrated in a horizontal orientation 	2 <input type="checkbox"/>	Tricuspid and mitral valve	0,5 <input type="checkbox"/>
<ul style="list-style-type: none"> Visualization possible only with assistance 	2 <input type="checkbox"/>	Interatrial + interventricular septum	0,5 <input type="checkbox"/>
<ul style="list-style-type: none"> Inadequate examination despite assistance 	0 <input type="checkbox"/>		
Examiner's notes:		FATE 2 Points ____/8	

FATE 3

Tip for the examiner: Pay attention to orientation, positioning of the transducer, coupling, image optimization, proper machine handling

Correctly obtain the parasternal long axis view of the heart , including quality features:		Correctly demonstrate and name the following structures:	
<ul style="list-style-type: none"> The mitral and aortic valve lie at the same level and are demonstrated in the middle of the image 	2 <input type="checkbox"/>	Mitral valve	0,5 <input type="checkbox"/>
<ul style="list-style-type: none"> The interventricular septum and posterior wall of the left ventricle are demonstrated in a horizontal orientation 	2 <input type="checkbox"/>	Papillary muscles	0,5 <input type="checkbox"/>
<ul style="list-style-type: none"> The descending aorta and the apex of the heart should be visualized 	2 <input type="checkbox"/>	Left ventricle	0,5 <input type="checkbox"/>
<ul style="list-style-type: none"> Visualization possible only with assistance 	2 <input type="checkbox"/>	Aortic valve	0,5 <input type="checkbox"/>
<ul style="list-style-type: none"> Inadequate examination despite assistance 	0 <input type="checkbox"/>		
Examiner's notes:		FATE 3 Points ____/8	

FATE 4

Tip for the examiner: Pay attention to orientation, positioning of the transducer, coupling, image optimization, proper machine handling

Correctly obtain the parasternal short axis view of the heart at the level of the papillary muscles , including quality features:		Correctly demonstrate and name the following structures:	
<ul style="list-style-type: none"> Round left ventricle (not egg shaped) 	6 <input type="checkbox"/>	Papillary muscles	0,5 <input type="checkbox"/>
<ul style="list-style-type: none"> Both papillary muscles, without parts of the mitral valve, are visualized 		Left ventricle	0,5 <input type="checkbox"/>
<ul style="list-style-type: none"> The right ventricle is visualized (half-moon shape) 	4 <input type="checkbox"/>	Right ventricle	0,5 <input type="checkbox"/>
<ul style="list-style-type: none"> Only one papillary muscle can be visualized/egg shaped form of the right ventricle 		Interventricular septum	0,5 <input type="checkbox"/>
<ul style="list-style-type: none"> Visualization possible only with assistance 	2 <input type="checkbox"/>		

<ul style="list-style-type: none"> ▪ Inadequate examination despite assistance 0 <input type="checkbox"/> <p><i>Examiner's notes:</i></p>	FATE 4 Points ____/8
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<u>FATE 5</u>																							
<p>Tip for the examiner: Pay attention to orientation, positioning of the transducer, coupling, image optimization, proper machine handling</p>																							
<table border="1" style="width: 100%;"> <tr> <td colspan="2">Correctly obtain the right lateral flank view at the level of the costodiaphragmatic recess, including quality features:</td> </tr> <tr> <td>▪ The diaphragm can be visualized</td> <td style="text-align: right; background-color: #d4edda;">2 <input type="checkbox"/></td> </tr> <tr> <td>▪ The costodiaphragmatic recess can be visualized</td> <td style="text-align: right; background-color: #d4edda;">2 <input type="checkbox"/></td> </tr> <tr> <td>▪ Subdiaphragmatic parts of the liver are visualized</td> <td style="text-align: right; background-color: #d4edda;">2 <input type="checkbox"/></td> </tr> <tr> <td>▪ Visualization possible only with assistance</td> <td style="text-align: right; background-color: #fff3cd;">2 <input type="checkbox"/></td> </tr> <tr> <td>▪ Inadequate examination despite assistance</td> <td style="text-align: right; background-color: #f8d7da;">0 <input type="checkbox"/></td> </tr> </table> <p><i>Examiner's notes:</i></p>	Correctly obtain the right lateral flank view at the level of the costodiaphragmatic recess , including quality features:		▪ The diaphragm can be visualized	2 <input type="checkbox"/>	▪ The costodiaphragmatic recess can be visualized	2 <input type="checkbox"/>	▪ Subdiaphragmatic parts of the liver are visualized	2 <input type="checkbox"/>	▪ Visualization possible only with assistance	2 <input type="checkbox"/>	▪ Inadequate examination despite assistance	0 <input type="checkbox"/>	<table border="1" style="width: 100%;"> <tr> <td colspan="2">Correctly demonstrate and name the following structures:</td> </tr> <tr> <td>Costodiaphragmatic recess</td> <td style="text-align: right; background-color: #d4edda;">0,5 <input type="checkbox"/></td> </tr> <tr> <td>Lungs</td> <td style="text-align: right; background-color: #d4edda;">0,5 <input type="checkbox"/></td> </tr> <tr> <td>Diaphragm</td> <td style="text-align: right; background-color: #d4edda;">0,5 <input type="checkbox"/></td> </tr> <tr> <td>Liver</td> <td style="text-align: right; background-color: #d4edda;">0,5 <input type="checkbox"/></td> </tr> </table> <p style="text-align: center;">FATE 5 Points ____/8</p>	Correctly demonstrate and name the following structures:		Costodiaphragmatic recess	0,5 <input type="checkbox"/>	Lungs	0,5 <input type="checkbox"/>	Diaphragm	0,5 <input type="checkbox"/>	Liver	0,5 <input type="checkbox"/>
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<u>FATE 6</u>																							
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Diaphragm	0,5 <input type="checkbox"/>																						
Spleen	0,5 <input type="checkbox"/>																						

<u>Overall performance regarding transducer manipulation according to the FATE protocol</u>	Points
Orientation	
<ul style="list-style-type: none"> ▪ All scan planes can be correctly assessed/ or directly independently adjusted/ Coupling 	2 <input type="checkbox"/>

▪ After initial difficulties, the scan plane/s can be corrected/ verbal instructions are needed	1 <input type="checkbox"/>
▪ Correct orientation only with assistance possible	0 <input type="checkbox"/>
Positioning of the transducer	
▪ All scan planes can be correctly obtained/ direct transition from one plane to another	2 <input type="checkbox"/>
▪ After initial difficulties, the scan plane/s can be obtained/ verbal instructions are needed	1 <input type="checkbox"/>
▪ The transducer can be correctly positioned only with assistance	0 <input type="checkbox"/>
Coupling/ Transducer manipulation	
▪ The transducer is covered with ultrasound gel sufficiently/ correct manipulation in all scan planes/ continuous pressure	2 <input type="checkbox"/>
▪ After initial difficulties, the scan plane/s can be obtained/ verbal instructions are needed	1 <input type="checkbox"/>
▪ No pressure and/or no ultrasound gel + uncontrolled pressure and/or insufficient transducer contact with the scanning surface	0 <input type="checkbox"/>
Adequate image magnification/ Image optimization/ Machine handling	
▪ Independent and adequate assessment in all scan planes, good image quality (Gain, Depth, Frequency, Focus), even during the examination, left hand on the machine	2 <input type="checkbox"/>
▪ After initial difficulties, the scan plane/s can be obtained/ verbal instructions are needed, the examinee forgets to optimize the image during the examination, left hand not on the machine	1 <input type="checkbox"/>
▪ Inadequate assessment despite verbal instructions → assistance needed	0 <input type="checkbox"/>
Breathing command	
▪ Correct breathing command (as long as necessary) in all scan planes, independent performance	2 <input type="checkbox"/>
▪ Incomplete examination or initial difficulties, verbal instructions are needed	1 <input type="checkbox"/>
▪ Inadequate breathing command, even after verbal instructions	0 <input type="checkbox"/>
Positioning of the patient	
▪ In case of difficulty obtaining a certain scan plane, the patient is positioned in a left lateral position/ the patient is positioned correctly	2 <input type="checkbox"/>
▪ Verbal instructions are given in order to position the patient correctly	1 <input type="checkbox"/>
▪ Inadequate patient positioning, even after manual instructions, assistance is needed	0 <input type="checkbox"/>
Duration of the examination/ Time	
▪ Adequate, independent time management during the whole examination	2 <input type="checkbox"/>
▪ Sufficient after initial difficulties or after verbal instructions are given	1 <input type="checkbox"/>
▪ Very slow/ inadequate	0 <input type="checkbox"/>
I rate the overall performance with (1 to 8 points) (please circle)	
1 – 2 – 3 – 4 – 5 – 6 – 7 – 8	___/8
<i>Examiner's notes:</i>	
FATE-Protocol Overall performance points ___/22	
Total point score FATE-Protocol	
(Sum up: Patient confrontation + FATE 1 to 6 + Overall performance)	
___/78	