

The TIDieR (Template for Intervention Description and Replication) Checklist

Item No.	Item
BRIEF NAME	
1	<p><i>Provide the name or a phrase that describes the intervention.</i></p> <p>Answer: The complex telehealth intervention (tele critical care program) consists of a round and response system being operated from a tele-medical single hub center at a tertiary academic medical center (Charité - Universitätsmedizin Berlin). It is a networked program and the Tele-ICU provides service for multiple locations in Berlin and Brandenburg, Germany.</p>
WHY	
2	<p><i>Describe any rationale, theory, or goal of the elements essential to the intervention.</i></p> <p>Answer: Rational for the telemedical service is the (1) improved implementation of evidence based treatment strategies involving core areas of critical care: daily targets, management of pain, agitation and delirium, ventilation and weaning, management of infections and antibiotics, nutrition, early mobilization and patient and family communication; (2) and an immediate access to tertiary university care.</p> <p>The tele-medical service provides (1) daily, scheduled medical rounds along evidence based quality indicators, (2) a 24/7 response possibility with an on-call specialist system.</p> <p>(1) On a pre-scheduled basis, all patients who are included in the study are rounded by the local team and the medical team with a tele-medical cart (see figure S1) on a daily basis.</p> <p>The medical round is structured along quality indicators. After presenting the medical case from the remote site to the tele medical team, the teams go through 8 quality indicators that can be seen in Table 1.</p> <p>(2) The telemedical cockpit has a 24/7 on-call service to promote prompt responses if any medical issues arise that have not been addressed in the daily round.</p>

Item No.	Item
WHAT	
3	<p><i>Materials: Describe any physical or informational materials used in the intervention, including those provided to participants or used in intervention delivery or in training of intervention providers. Provide information on where the materials can be accessed (such as online appendix, URL).</i></p> <p><u>Answer:</u></p> <p>A. The materials for the telemedical service consist of hardware and two software components (provider access for audio-video platform and QI-documentation platform). All requirements were summarized in a specification document. In consequence, a tender regarding EU-legislation took place and all company offers were evaluated. The US company InTouch Health™ finally provided the tele medical service with hard and software equipment. As the telemedical device the LITE V3 or V4 for the remote sites consists of a <i>cart</i> with three cameras, directional microphone, power cord shelf hook, privacy handset, shelf, handle, expansion bay, power plug and cord, wheel locks, and a basket. The technical specifications can be accessed in the manufacturer’s brochure at https://cloud.kapostcontent.net/pub/8d517633-fd5f-48c8-b719-5bf632f0af3c/product-brochure-lite-reference-manual.pdf?kui=N3NYTZk7alpGrRkkGOroXA</p> <p>B. The intervention and intervention-providers are trained in a <i>3 months training program</i> preceding the intervention. We use a password-protected blended learning with e-learning (how to use the intervention) and a simulator based training (4 sessions per participating ICU targeted at topics on ventilation, PADs management, antibiotics and team-performance). Every sequence group has a separate training to avoid changes in the group due to the training without having the intervention being implemented.</p>
4	<p><i>Procedures: Describe each of the procedures, activities, and/or processes used in the intervention, including any enabling or support activities</i></p> <p><u>Answer:</u></p> <p>The tele medical service provides</p> <p>(1) daily, scheduled medical rounds along evidence based quality indicators;</p> <p>(2) a 24/7 response possibility with an on-call specialist system.</p>

Item No.	Item
	<p>(1) On a pre-scheduled basis, all patients who are included in the study are rounded by the local team and the medical team with a tele medical cart (see figure S1) on a daily base. The teams consist of the treating physician and the bedside nurse remotely and a board-certified intensivist and a nurse specialized in intensive care in the tele cockpit. After presenting the medical case from the remote site to the tele medical team, the teams go through 8 quality indicators that can be seen in Table 1.</p> <p>(2) The telemedical cockpit has a 24/7 on-call service to promote prompt responses if any medical issues arise that have not been addressed in the daily round.</p> <p>Support activities are a fleet-management program provided by InTouch Health® to ensure 24/7 readiness of the systems. Proactive monitoring and maintenance of the devices. On the job-trainings on the use of the devices has constantly been provided.</p>
WHO PROVIDED	
5	<p><i>For each category of intervention provider (such as psychologist, nursing assistant), describe their expertise, background, and any specific training given</i></p> <p><u>Answer:</u> The teams consist of the treating physician and the bedside nurse <i>remotely</i>, and a board-certified intensivist and a nurse specialized in intensive care <i>in the tele cockpit</i>. Specific training in the remote sites included the use of telemedicine, the content of the quality indicators and technical support regarding the devices.</p> <p>All cockpit-staff underwent training period in the remote control of the devices with an InTouch Health® employee being present, as well as a structured training program including 2 hours of telemedicine in a demo-environment in Santa Barbara provided by InTouch Health®. An on-site training and instruction briefing. A technical drill to provide quick troubleshooting if there are technical problems and theoretical lectures provided by the program coordinator. And simulator sessions in the Berlin Simulator and Training Center. All medical cockpit staff has a consultant status in the hospital, i.e. a board-certified specialist for Intensive Care Medicine.</p>

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HOW	
6	<p><i>Describe the modes of delivery (such as face to face or by some other mechanism, such as internet or telephone) of the intervention and whether it was provided individually or in a group.</i></p> <p><u>Answer:</u> At a prescheduled time the daily telemedical round is initiated with a phone call by the coordinating nurse in the remote site. The connection is then established via the LITE 4.0 in the remote site and the InTouch Provider Access Application on the computer in the cockpit.</p>
WHERE	
7	<p><i>Describe the type(s) of location(s) where the intervention occurred, including any necessary infrastructure or relevant features.</i></p> <p><u>Answer:</u> The intervention occurs in the remote site in the ICU and in the teleservice provider in a dedicated space called “Tele-ICU-cockpit”. It is a room in the tertiary care center which is only used for telemedicine.</p>
WHEN AND HOW MUCH	
8	<p><i>Describe the number of times the intervention was delivered and over what period of time including the number of sessions, their schedule, and their duration, intensity, or dose.</i></p> <p><u>Answer:</u> The intervention occurs every day (7 days a week) in every patient after inclusion until discharge. Additional tele-medical rounds can be added on demand. There is no formal limitation.</p>
TAILORING	
9	<p><i>If the intervention was planned to be personalised, titrated or adapted, then describe what, why, when, and how.</i></p> <p><u>Answer:</u> The intervention and recommendations are tailored to the specific patients. No general recommendations without a clear link to the patients</p>

Item No.	Item
	are made.
MODIFICATIONS	
10 *	<p><i>If the intervention was modified during the course of the study, describe the changes (what, why, when, and how).</i></p> <p><u>Answer:</u></p> <p>Not relevant to the protocol and cannot be described until the study is complete.</p>
HOW WELL	
11	<p><i>Planned: If intervention adherence or fidelity was assessed, describe how and by whom, and if any strategies were used to maintain or improve fidelity, describe them.</i></p> <p><u>Answer:</u></p> <p>The intervention adherence is monitored by the leading physician of the tele-ICU. The login-time is monitored by the “fleet management system (FMS)”. The fleet management ensures that the remote-devices are online and accessible. Maintenance can be provided remotely if necessary. In addition, a monthly report shows the connection times that allow conclusions about compliance. There are supervised sessions to ensure the intervention is delivered as planned.</p>
12 *	<p><i>Actual: If intervention adherence or fidelity was assessed, describe the extent to which the intervention was delivered as planned.</i></p> <p><u>Answer:</u> Not relevant to the protocol and cannot be described until the study is complete.</p>

* If completing the TIDieR checklist for a protocol, these items are not relevant to the protocol and cannot be described until the study is complete.

Summary of the ERIC intervention

The complex telehealth intervention (tele critical care program) consists of a *round and response system* being operated from a telemedical cockpit at a tertiary medical center (Charité -Universitätsmedizin, Berlin).

The tele medical service provides (1) daily, scheduled medical rounds along evidence based quality indicators, and (2) a 24/7 response possibility with an on-call specialist system.

(1.) On a pre-scheduled basis, all patients who are included in the study are rounded by the local team and the medical team with a tele medical cart (see figure S1) on a daily basis. The teams consist of the treating physician and the bedside nurse remotely and a board-certified intensivist and a nurse specialized in intensive care in the tele cockpit.

The medical round is structured along critical care quality indicators. After presenting the medical case from the remote site to the tele-medical team, the teams go through 8 quality indicators (for definition see Table 1 in the main article).

(2.) The telemedical cockpit has a 24/7 on-call service to promote prompt responses if any medical issues arise that have not been addressed in the daily round.



Figure S1. Photograph of the tele-ICU equipment to remotely monitor off-site ICU patients (intensive care telemedicine service provided by the tele-ICU cockpit located at Charité): *Tele-medical cart* with three cameras, directional microphone, power cord shelf hook, privacy handset, shelf, handle, expansion bay, power plug and cord, wheel locks and a basket.