### 1 Components of the delirium management protocol

| Delirium prevention: | Based on individual patient risk factor constellations and 13 defined delirium risk areas, nurses and physicians select and conduct appropriate delirium prevention measures. Delirium risk control includes the prevention /correction of electrolytic disturbances and dehydration, improvement of communication and orientation with clocks and calendars, regular verbal communication with the patient, avoidance of immobilization; multiprofessional non-pharmacological and pharmacological delirium prevention measures are selected [1]. |
| Early recognition of deliriums | All patients admitted who were aged ≥ 65 or regular ward patients of any age, showing conspicuous symptoms such as disorientation or agitation are screened for delirium once per shift at their bedside with the Delirium Observation Scale (DOS) [2] for at least three days. A DOS score ≥ 3 indicates a delirium. If DOS scores are unremarkable, screening is stopped after three days. If a patient develops delirium, the screening is continued until the DOS score falls below 3. The DOS is a 13-item screening tool for non-ICU patients. It facilitates early recognition of delirium according to Diagnostic and Statistical Manual-IV criteria. In several studies the sensitivity (82-89%) and specificity (86-96%), as well as the reliability and validity of the tool have been confirmed [2, 3]. Once per shift, all Intensive Care Unit (ICU), Intermediate Care (IMC), and Post-Anesthesia Care Unit (PACU) patients whose consciousness allows a screening (Richmond Agitation Sedation Scores (RASS) -3 to +4) are screened for delirium by the bedside nurse via the Intensive Care Delirium Screening Checklist (ICDSC) [4]. An ICDSC score ≥ 4 indicates a delirium. The ICDSC is an 8-item screening tool developed for delirium detection in ICU patients [4]. In several studies, the tool has shown good sensitivity (64%, 89%, 99%) and specificity (57%, 64%, 95%), as well as good validity and reliability (kappa 0.67, 0.91, 0.92) [4, 5]. |
| Delirium diagnostic | For regular ward patients, at the first DOS Score ≥ 3, more specific assessments are conducted with the Mental-Status-Questionnaire (MSQ) [6], the Monate Rückwärts Zählen (MRZ, “Bedsite Confusion Scale”) instrument [7]and the [8]Confusion Assessment Method (CAM). The MSQ is a 10-item tool to assess cognition and attention[6]; the MRZ used includes one item from the Bedsite Confusion Scale (BCS); the BCS was developed by Stillman & Rybicki, 2000 to detect alteration in attention[7]; and the CAM is a 4-item diagnostic tool developed by Inouye (1990) to identify delirium based on defined criteria [8]. The tool is frequently used and shows good sensitivity (81%, 94% - 100%) and specificity (63%, 89% 90%-95%), as well as good reliability and validity [8, 9]. In all patients (regular ward, ICU, IMC, PACU) with screening scores indicating a delirium (ICDSC Score ≥ 4, positive CAM score and / or DOS...
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| Score ≥ 3 | physicians and nurses conduct further delirium diagnostic tests. This includes defined laboratory tests and other specific tests to confirm / exclude the initially indicated delirium and etiology (i.e., infection, pulmonary deterioration, metabolic disorders). In patients with a confirmed delirium, nurses and physicians document the appropriate medical and nursing diagnoses in the patient charts. |

| Delirium treatment | All patients with confirmed delirium receive a pharmacological delirium treatment with pipamperon p.o. (hyperactive symptoms) or haloperidol p.o. (i.v. in ICU, IMC patients) (hypoactive symptoms) \[10\] and, if required, other medications to treat accompanying symptoms. E.g., if a patient with hypoactive symptoms also shows restlessness, a combination of both medications and / or lorazepam s.l. is applied. In non-cooperative delirious patients who do not respond to the previous pharmacological therapy, continuous dexmedetomidine, clonidine or midazolam infusions are used for a defined time. |

| Training program for nurses and physicians | To train the nurses and physicians in the different components of delirium management, as defined in the protocol, the multiprofessional project team has developed a training program (eLearning, face-to-face lectures). |

References