Additional file 6: Healthcare professionals' perceived barriers and facilitators to sepsis care

Additional file 6. **Perceived barriers and facilitators to sepsis care.**

Barriers	Facilitators
Prevention	
Knowledge gaps/ uncertainties about risks specific to asplenia Contraindicated concurrent treatments Post-discharge vaccination sequence Updated vaccination recommendations Scarcity of routine care for asplenic patients Misleading information in the discharge letter Hospital's failure to call patients' attention to subsequent primary outpatient care Patients' lack of awareness Patients' comorbidities Patients' concerns about the late effects of vaccination Delivery shortages of vaccines Demanding documentation requirements	
Early recognition	
Knowledge gaps in sepsis criteria/ relevant clinical signs Lack of training in detecting sepsis Availability of physicians on the wards Time-limited staff-patient contact Complexity of sepsis Lack of consistency in detecting non-specific warning signs Lack of necessary equipment High patient acuity and volume Lack of insight into patients' baseline status Less qualified junior physicians Lack of supervision by experienced physicians Task-oriented (rather than coaching-oriented) actions	Adherence to blood culture sampling guidelines: • regular training • more time in professionals' work for continuing medical education Ability to seek advice Intercollegiate supervision and reflection Clinical expertise Clinical intuition/ gut feeling Visible cues during direct professional-patient interaction Acceptance/utility of and trust in electronic early warning systems: • when data at hand is diffuse • when the course of action is difficult to predict • when specific interventions are attached to the alert • understanding how the system works

Lack of adherence to guidelines of blood culture sampling: • unawareness of guidelines‘ content • time constraints during everyday work Acceptance/utility of and trust in electronic early warning systems: • lack of predictive value • lack of specifity • lack of efficacy • low precision • little patient-centeredness • little transparency • alert fatigue • complexity Uncertainties in referral decisions Narrowness of guidelines when assessing complex and ambiguous clinical presentations	• direct experience with the system • external studies validating its effectiveness • recommendations from colleagues and experts • integration of own recommendations into the tools‘ operation • minimization of the alert frequency by optimizing the threshold • provision of explanations of the alert content • integration of the alert into the workflow • provision of direct feedback • interventions that are based on an established treatment protocol • interventions that focus on the patient’s clinical condition as a whole rather than on predefined thresholds • indication to call the medical emergency team General patient appearance Patient history Physical examination of the patient Previous experiences with similar patient cases
Timely treatment	
Rather low prioritization of sepsis medical initiative compared to other medical initiatives Communication of sepsis-related health risks to patients Uncertainties about whether the patient needs fluid Uncertainties about the appropriate fluid volume Lack of research and evidence on prehospital fluid therapy Poor adherence to protocols outside the ICU / by specialties outside of anesthesia: • lack of knowledge • complexity of existing protocols with sequential and interdependent steps of coordination, collaboration, and communication among multidisciplinary staff • non-intuitiveness • resource-intensiveness • information-overload • provider-unfriendliness • unmet needs of individual patients • heavy clinical documentation Complexity and vagueness of sepsis manifestation	Clinical intuition Use of sepsis screening tools and protocols Schooled response team (prompt and uninterrupted escalation of care with less coordination and task-switching) Granting nurse-initiated procedures without physician approval and prescription Knowledge of sepsis triggers Familiarity with the respective protocols/bundles Education and training on how to handle non-standard situations Perceived effectiveness of the respective protocols Perception that benefits of care escalation outweigh potential risks Feedback, support, and advice from experienced colleagues Transdisciplinary collaboration in the ICU High probability of infection High illness severity Clinicians‘ specialty (emergency medicine)

High resource demands of sepsis care: • time pressure • busy/heavy workload • high patient acuity • competing demands • interruptions in workflow • staffing shortages • delays in interventions by nurses • equipment/treatment unavailability • time-consuming patient transfers Knowledge gaps (e.g., antibiotic pharmacokinetics and pharmacodynamics) Low level of experience Low level of assertiveness Low level of training Small range of clinical skills Low provider engagement Negative attitudes towards protocol use Fear of harming the patient in the absence of an established diagnosis Fear of septic patients in general Insufficient prioritization of treatment of severe sepsis and septic shock Nurses' lack of authorization (dependence on physician prescriptions and orders) Uncertainty about the chain of command Physician unavailability Delays in prescriptions Delays in laboratory results and other diagnostics Rather task-oriented and less holistic assessment → reduced critical thinking and clinical reasoning Imbalance in initiating but not reviewing/stopping infection management for junior physicians Lack of feedback to junior physicians from experienced senior physicians → little learning gains in infection management Low probability of infection Low illness severity Clinicians' specialty (other than emergency medicine) Lack of/ inadequate availability of antibiotics on the unit	High clinical experience

Lack of awareness that intravenous antibiotics were available on/ ordered to the unit Intravenous line access issues	
Transitions of care	
Failures in communication and collaboration among providers: • hostile/intimidating work environments characterized by little respect • interdisciplinary conflicts • poorly coordinated patient handovers to another unit or sector • medical histories and anamneses with incorrect content • absence of (the responsible) physician(s) • lack of information about the urgency with which to treat septic patients Low capacity of available hospital beds Lack of staff for transportation Long latencies of laboratory results and/or other diagnostics Different heterogeneous documentation systems	Mandatory training sessions Guiding checklists and posters Reviews of septic patient cases who received substandard care Establishment of standard operating procedures Experienced and knowledgeable physician undertaking emergency department triage A physician as a central point of contact for all wards Presence of a physician at the point of transition Completion of a sepsis checklist for all newly admitted patients Personal verbal instructions Feedback to facilitate reflective learning Effective communication pathways Early warning scores Revised electronic templates for recording physiologic parameters Education about sepsis Completion of an electronic summary of patients' clinical and social information compiled by the patient's PCP and made available to other medical parties In-hospital quality improvement team
Aftercare	
Little communication about sepsis sequelae and consequences with survivors, their families, and PCPs Limited and incomplete information sharing between ACPs and PCPs (e.g., by telephone, discharge summary) due to: • time constraints • perception of low priority • difficulties in establishing contact with the PCP Reception of lay clinical information by patients and relatives Absence of care after hospital discharge	Two-way information flow between ACPs and PCPs when: • unplanned admission to the ICU • unplanned discharge from the ICU • patient death in the ICU Brief information sharing at ICU admission More explicit provision of information at discharge about: • why the admission occurred • what the consequences were • what to target in future treatment Contact at ICU admission (between ACPs and PCPs) should not only serve to inform the PCP

Direct collaboration of different disciplines in the fragmented pathways of care PCPs‘ limited time, knowledge, experience, and skills to adequately support patients in the aftercare process Lack of availability of and access to further supportive care services (e.g., physiotherapy and psychotherapy) Health insurance issues and limited cost coverage	about the critical illness but also to provide ACPs with patient data relevant to early patient management Care coordination between inpatient to outpatient clinic services that offer: • diagnostics • counseling • psychological aftercare • targeted referral to specialists • relatives’ involvement PCPs‘ continuity of care and their good relationship with patients, characterized by detailed knowledge of patients‘: • medical history • social background • personality traits • illness coping mechanisms Filling patient education gaps, especially related to post-ICU complications → patient engagement Case management PCPs‘ education about post-ICU complications Regular interdisciplinary conferences to promote peer-to-peer learning