

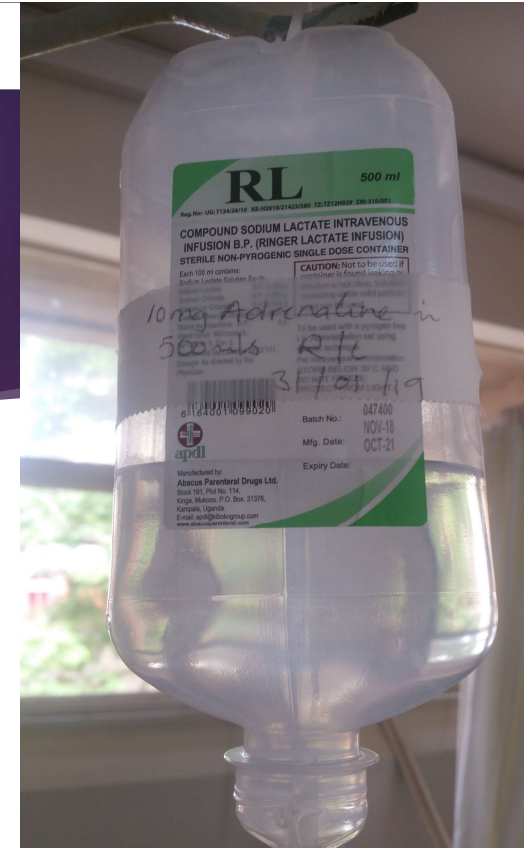
Administration of vasopressor infusions in critical care units in a low resource setting

Background

- ▶ Critical care provision varies globally and reflects the healthcare services they support.
- ▶ In resource-limited settings balancing scarce workforce, resources, and competing demands for funding for healthcare services is a significant challenge and will determine critical care services and practices.
- ▶ World Bank Definitions:
 - ▶ Low Income Country (LIC)
 - ▶ Low Middle Income Country (LMIC)

Vasopressors use in critical care

- ▶ The World Health Organization (WHO) (2017) essential medicines list includes epinephrine (adrenaline) as essential and dopamine as a complimentary provision.
- ▶ International best practice publications refer to the administration of vasopressors to manage a variety of conditions (WHO, 2004. 2009. International Committee of the Red Cross, 2018).



Aims & Objectives:

- ▶ *Aims:*

- ▶ To appraise the existing evidence relating to the management of a vasopressor infusion in a critical care unit in a resource-limited setting.

- ▶ *Objectives of this study:*

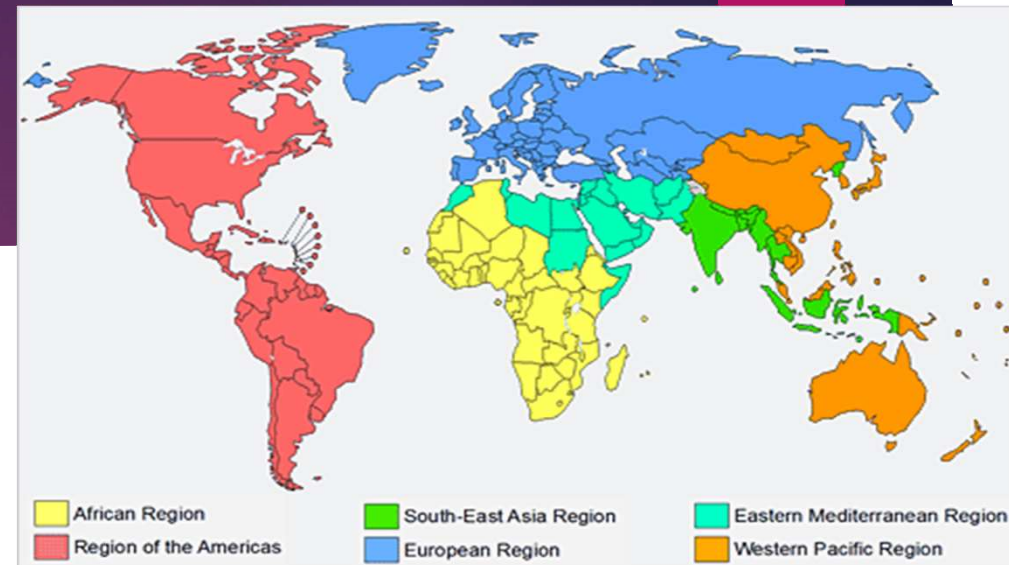
- ▶ To review and appraise the current evidence and highlight best practice relating to the management of a vasopressor infusion in a critical care unit in a low resource setting.

Design methods

- ▶ Both qualitative and quantitative research
- ▶ Multiple systematic searches of the Cumulative Index of Nursing and Allied Health Literature (CINAHL) and Medline, between 2008 and 2018 were identified.
- ▶ Supplementary search methods including reference lists, expert discussions and hand searching websites and journals completed the search.
- ▶ An inclusion and exclusion criteria guided the screening of papers.
- ▶ Last search conducted in February 2019.

Results

- ▶ 259 papers
- ▶ 30 papers met the inclusion criteria and analysed.
 - ▶ (29 Quantitative. 1 Qualitative)
- ▶ Themes included:
 - ▶ Professional issues relating to the administration of vasopressors;
 - ▶ Access to equipment and medications
 - ▶ Experience of staff
 - ▶ Nursing considerations.



Region	Number
Africa	9
South East Asia Region	8
Combination of regions	4
Region of the Americas	4
Western Pacific Region	3
Eastern Mediterranean Region	2

Professional Issues relating to Administration of vasopressors

- ▶ Use of protocols for treatment
 - ▶ Andrews et al, 2017. Andrews et al. 2014. Phua et al, 2011. Guo et al. 2014.
- ▶ Initiation of vasopressors therapy in emergency departments
 - ▶ Aluisio et al, 2018. Andrews et al. 2017. Besen et al 2016. Santhanam et al 2009
- ▶ Delays in starting treatment & impact on outcome
 - ▶ Uganda (Kwizera et al, 2016)
 - ▶ China (Xiaowu et al 2014)
 - ▶ Asia (Bouchard et al. 2015)

Professional Issues

- ▶ Ethical considerations
 - ▶ High burden of disease (Aluisio et al. 2018. Andrews et al. 2014)
- ▶ 'Pushing the boundaries of critical care practice'
 - ▶ Use of vasopressor infusions in highly infectious situations (Langer et al. 2018. Rajapakse, 2011).
- ▶ Withholding of Treatment
 - ▶ Phua et al (2016)



Access to Critical Care & Equipment

- ▶ De Wulf et al (2015) Region of Haiti
 - ▶ No critical care services were available in the region.
- ▶ Baelani et al (2011) 307 African self-reported questionnaires:
 - ▶ 73.8 % had access to an intensive care unit (P <0.001)
- ▶ Sierra Leone (Langer et al. (2018)
- ▶ Uganda (Dunser et al. 2017)
- ▶ DR Congo (Baelani et al. 2012).
- ▶ Africa (Baelani et al. 2011)
- ▶ Mongolia (Bataar et al. 2010).
- ▶ Brazil (Oliveira et al. 2008)
- ▶ Haiti (De Wulf et al. 2015)

Access to Equipment

► Leligdowicz et al (2017)

Resource	Ghana	Nigeria	DR Congo	Rwanda	Zambia	Malawi	Zimbabwe	Nepal	Cambodia
Intravenous vasopressors	Often	Always	Rarely	Always	Often	Rarely	Sometimes	Always	Sometimes
Infusion pumps	Always	Always	Never	Always	Sometimes	Rarely	Sometimes	Often	Often
Arterial catheters	Sometimes	Never	Never	Never	Never	Never	Rarely	Often	Rarely
Central venous catheters	Often	Always	Rarely	Always	Rarely	Never	Often	Always	Sometimes

Access to equipment

- ▶ Haniffa & DeSilva (2014) survey of 99 critical care services in Sri Lanka:
 - ▶ 100% of units had access to basic infrastructure (e.g. continuous supply of electricity) and basic monitoring and infusion pumps.
- ▶ Use of vasopressors in the management of septic shock (Ramaswamy et al. 2016. Venugopal et al. 2016. Dias et al. 2012. Mahmoud & Ammar. 2012. Patil 2009).

Experience of staff

- ▶ Haniffa & DeSilva (2014) survey of critical care services in Sri Lanka:
 - ▶ 87.9% of respondents reported providing 1:1 nurse to patient ratio, however, 11.4% of nurses had received formal intensive care training.
- ▶ Baelani et al (2014) survey exploring the availability of critical care resources in Africa.
 - ▶ Shortage of critical care doctors and nurses, clinicians from other specialities and the wards may be managing patients.

Experience of Staff

- ▶ Oliveira et al (2008) paediatric sepsis care in Brazil found:
 - ▶ Lack of recognition of early shock
 - ▶ Non- following treatment protocols.

- ▶ Santhanam et al (2009) India
 - ▶ 66% of respondents did not feel comfortable titrating inotropes in the ED
 - ▶ 92 (78%) felt central venous access and 78 (67%) arterial pressure monitoring were unimportant in the management of refractory shock
 - ▶ 92 (78%) had never inserted a central venous catheter
 - ▶ 90 (76%) had never inserted an arterial line

Nursing Considerations

- ▶ Case-mix (Riviello et al. 2016)
 - ▶ Average Age 34 (25-47 years)
 - ▶ 72.8% patients required endotracheal intubation for respiratory failure
 - ▶ Within 24 hours of admission:
 - ▶ 42.2% diagnosis of sepsis, 33% severe sepsis and 20.8% septic shock
 - ▶ Surgical intervention 69.3%
- ▶ Complications of administration of vasopressors via a peripheral line (Medlej et al. 2018)
- ▶ Follow up post Critical Care Discharge
 - ▶ Patients readmitted to critical care during same hospitalization associated with increased risk of in-hospital death (Ponzoni et al. 2017).

Limitations

- ▶ All studies were medical – critical care not recognised as a speciality
- ▶ Country & regional variations
- ▶ Clinically selected patients – not representative of critically ill patients in hospital.
- ▶ Lack of critical care facilities
- ▶ Focus on resources not healthcare professionals skills
- ▶ Small sample size
- ▶ Lack of documentation / records
- ▶ Lack of appropriate consensus guidelines
- ▶ Limited access to the internet
- ▶ Influence of expatriate staff which may have impacted on care
- ▶ Set in tertiary hospitals – not representative of all hospitals
- ▶ Delays in getting to hospital may have influenced outcomes
- ▶ Ethics approval not clear in some studies
- ▶ Hand searching
- ▶ Not all studies published in English.

Conclusion

- ▶ Delivery of critical care in low resource setting is complex
- ▶ Realities of data collection burden versus delivery of healthcare services
- ▶ Development of consensus guidelines difficult due to variations in resources and provision of critical care services.
- ▶ Best practice guidelines,
 - ▶ Joined up approach in terms of procurement of equipment and medications, sufficient HR, education and evidence
 - ▶ Development of a guideline focusing on core standards and building to 'full availability of staff and resources.
 - ▶ Based on healthcare professionals working in critical care, emergency departments, operating theatres and wards.
 - ▶ Impact of lack of access to continuing professional development opportunities and internet
- ▶ Requirement for further research.

