Morbidity patterns and factors associated with mortality in the Inpatient Therapeutic Feeding Centre (ITFC) in Abs General Hospital, Yemen

Su Lan Yang

16 May 2024

Co-authors: Marina Gonzalez[1], Hussein Ali Hazaea Mohammed[1,2], Sylvia Lim[3], Eva Ferreras[4], Ania Luczynska[5], Montse Escruela[4], Ana Valori[4], Celia Roman[5], Piex Uwiragiye[1], Augusto Llosa[4]

[1]Médecins Sans Frontières (MSF), Abs, Yemen; [2]Abs General Hospital, Abs, Yemen; [3]MSF Luxembourg Operational Research (LuxOR) Luxembourg; [4]MSF, Barcelona, Spain; [5]MSF, Amman, Jordan

Conflict of Interest:
The author has declared no conflict of interest.

Introduction – Context and why

Abs General Hospital, Yemen

- Conflict and humanitarian crisis
- MSF support since 2015
- ITFC is a stabilization ward for malnutrition children with medical complications / failed appetite test
- Capacity of 60 beds

Study rationale:

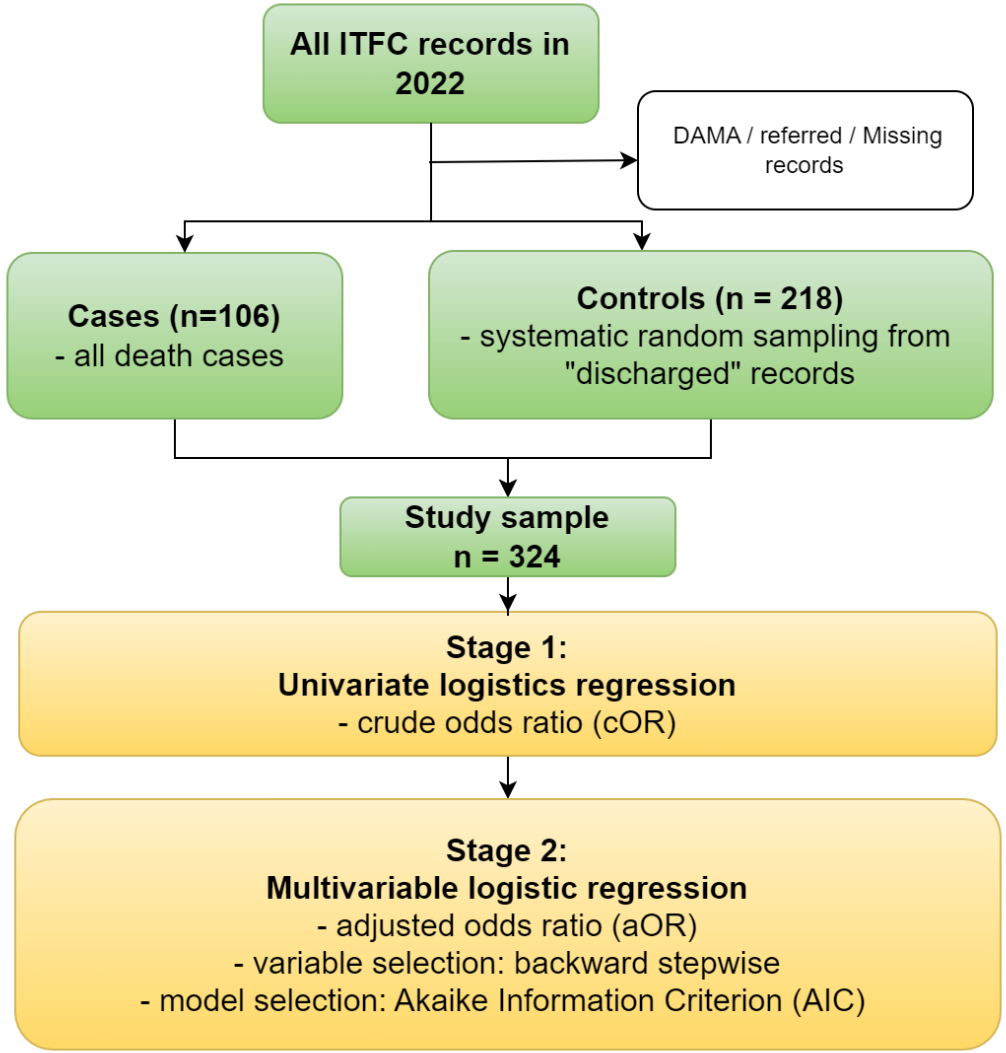
- To informed action plans for reducing mortality in ITFC (~ 5%)

Study objectives:

- To assess patients' demographic and mortality risk factors

Methods

- Unmatched case-control study (1:2)
- Retrospective data collection
- Variables
- Sample size determination
  - n=309 to detect odds ratio of at least 2.5 with power 0.8 and confidence level 0.95
- Analysis
  - statistics and clinical relevance
  - consider confounding factors, multicollinearity and interactions between variables



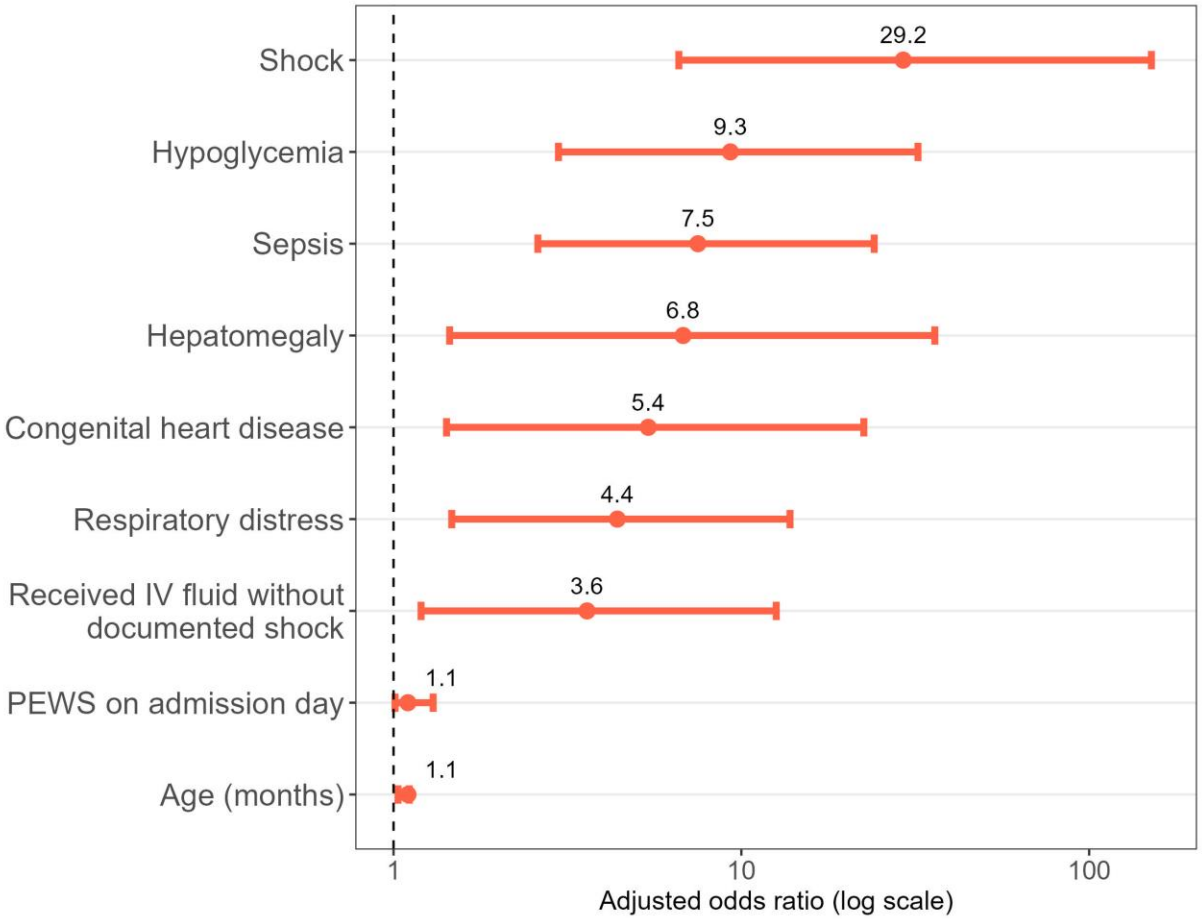
Findings – Patient characteristics

Causes of death – Pneumonia (38%), gastroenteritis (24%), sepsis (23%)

Characteristic	Overall, n=324
Age group	
< 6 months	75 (23%)
≥ 6 months	249 (77%)
Male	161 (50%)
Median MUAC (mm) (IQR)	
< 6 months	88 (80, 98)
≥ 6 months	104 (95, 110)
WHZ score <-3	285 (89%)
Oedema	48 (15%)
Highest PEWS on day 1 ≥ 7	73 (23%)

PEWS, Paediatric Early Warning Score (Summary of respiratory rate, O2 saturation, heart rate, capillary refill, consciousness, temperature.

Findings – Mortality risk factors



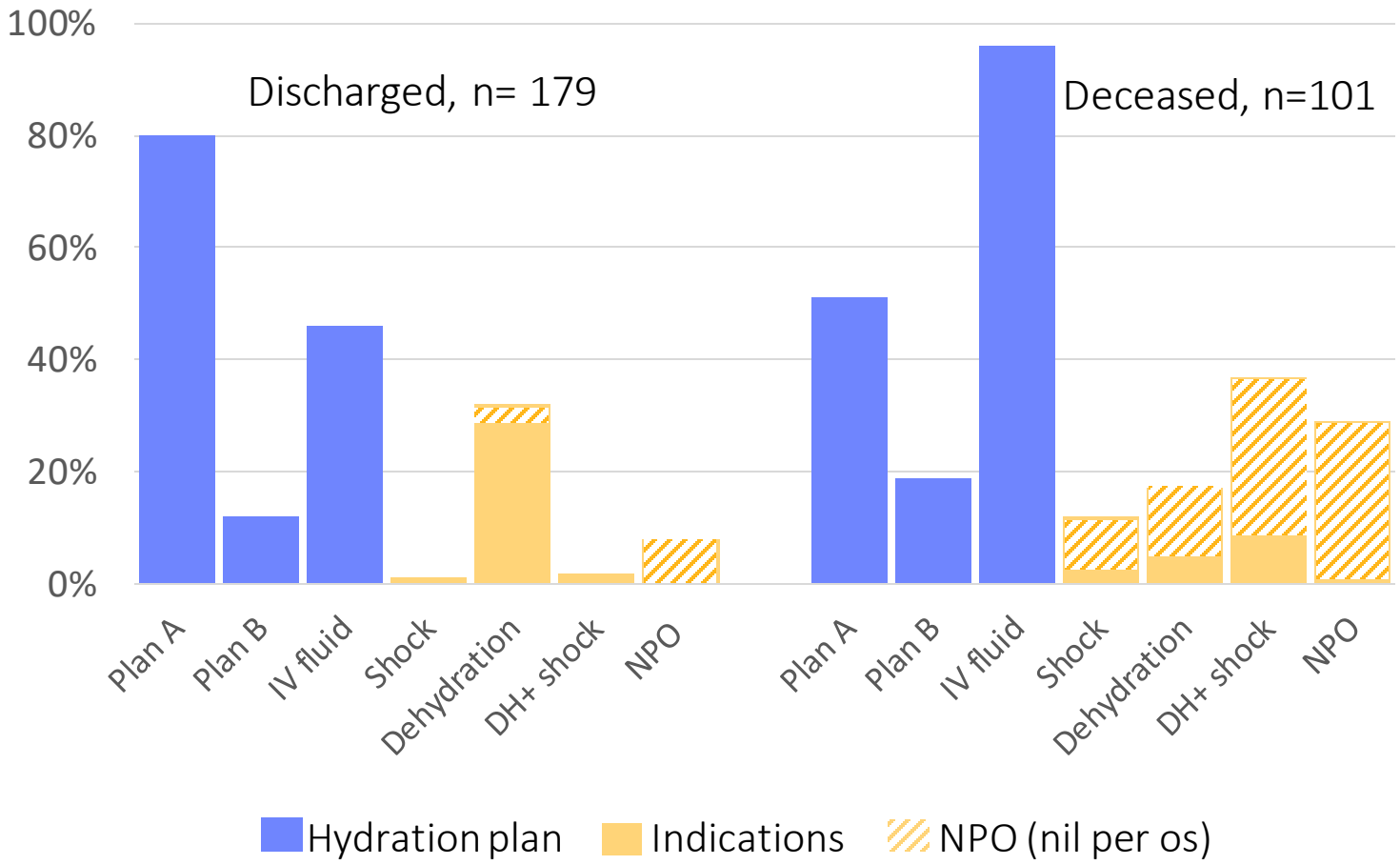
Mortality risk factors from multivariable analysis.

Medical complications found exclusively among the deceased : **electrolyte disturbance, hypothermia, acute kidney injury, coma, pancytopenia, fluid overload and hydrocephalus.**

Patients from further districts have higher odds of ITFC mortality.

Findings – Rehydration plans

Among those who were given rehydration plans:



We used rehydration plans for SAM as per MSF paediatric guideline 2017.

The rehydration plans depend on the presence of shock, level of dehydration and ability to drink.

Observation 1: The use of Plan B was low.

Observation 2: The use of IV fluid was high.

Limitations

1. Retrospective design did not allow for exploring additional confounding factors.
2. Recording bias.
3. Wide 95% confidence intervals.
4. Timing when the risk factors developed could not be fully evaluated.

Recommendations and Implementations

1. Assign ITFC focal points to oversee clinical management and protocol adherence.
2. Create awareness among doctors, emphasize the mortality risk factors to prompt early identification.
3. Designate a “red zone” for frequent monitoring.
4. Close monitoring on the use of IV fluids.
5. Admit patients with congenital conditions to general paediatric ward.
6. Improve clinical documentation.

Take home messages

1. The significant ITFC mortality risk factors are shock, hypoglycemia, sepsis, hepatomegaly, respiratory distress, congenital heart disease, intravenous fluid treatment without shock, severity at admission and age.

2. Use the findings to engage people to reflect/discuss/inform improvement plans.

3. Opens up the opportunity to investigate other outcomes such as readmission and nutrition rehabilitation.

Thank you!

Acknowledgement

Those who assisted, with full dedication, with the sampling and data extraction from ITFC records—Soad Fariqah, Ahmed Dabaj, Mohammad Abdo and Sadik Abu Hadi.

Those who involved in the development and technical reviews of the study protocol and report — Marina Gonzales Arias, Hussein Ali Hazaea Mohammed, Sylvia Lim, Augusto Llosa, Eva Ferreras, Ania Luczynska, Montse Escruela, Ana Valori, Maria M Buero and Celia Roman.

Those who facilitated the study activities — Abdul Rahman, Piex Uwiragiye, Elena Grandío, Rameline Kenne, Alex Cabourdin, Benjamin K. Mutiso and Adel Salah Hadi Al Danei.

Cyrille Tsikam Mba (GIS team) and Jinane Saad (Communication team) for the wonderful map and ITFC photo.

Ethics statement

Fulfils the exemption criteria set by the MSF ERB and was approved for submission by the OCBA Medical Director and Abs Hospital Director. All data are anonymized.