Prehospital identification of Sepsis (A retrospective observational study from South-Rogaland)

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BACKGROUND AND AIMS

- In 2017, sepsis affected an estimated 48.9 million people and caused 11 million deaths worldwide, accounting for ~20% of all global deaths (1)
- Delayed antibiotic administration is associated with increased mortality in sepsis (2-4)
- Although recognition begin at the emergency medical dispatch center (EMDC), its downstream impact remains poorly understood
- We examined whether correct EMDC suspicion of sepsis is associated with faster time to antibiotic administration

METHODS

Design and setting

- Retrospective registry-based study at Stavanger University Hospital, January 2022 to December 2023, Adults (≥18 years)

Inclusion

- Sepsis present on ED admission, confirmed by ICD-10 diagnosis: A40 to A41 (primary), or R65.0, R65.1, R57.2 (secondary)

Exposure

- EMDC recognition of sepsis, Norwegian Index criterion 16 (suspected serious infection/sepsis) at dispatch, versus dispatch under any other symptom-based criterion

Outcomes

- Primary outcome: time from ED arrival to antibiotic administration
- Secondary outcomes: administration within 60 and 120 minutes

Statistical analysis

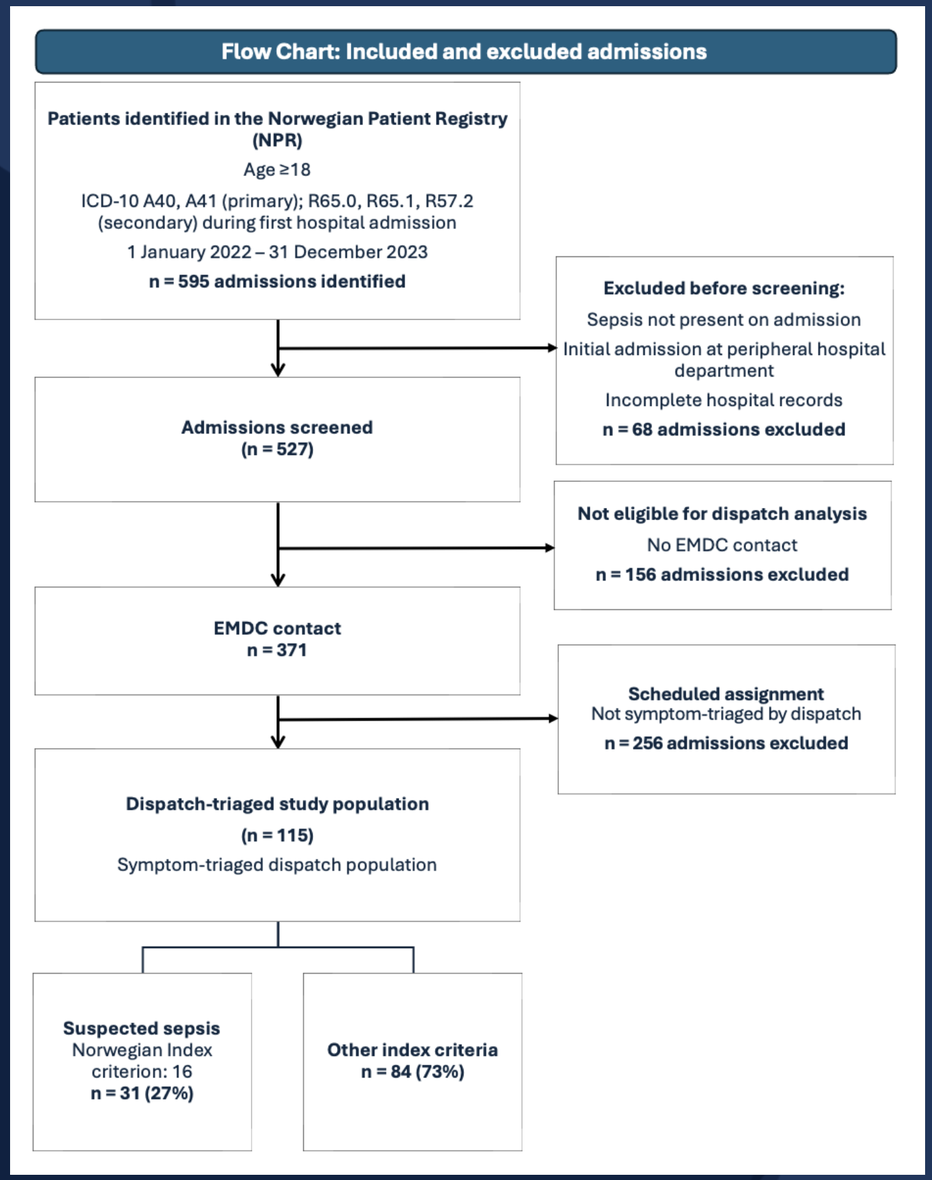
- Linear regression (continuous time) and logistic regression (60 and 120 minute thresholds), adjusted for age, sex, ED triage priority, and ED TEWS (Triage Early Warning Score)

Results

- 527 sepsis admissions; 371 (70%) involved EMDC contact
- Of these, 256 were scheduled assignments, leaving 115 symptom-triaged patients
- EMDC suspected sepsis in 31 (27%)

Table 2. Distribution of EMDC main index chapters

	N = 115[1]
EMDC main index chapter	
Fever / infection / sepsis	31 (27%)
Unclear problem	24 (21%)
Breathing difficulties	17 (15%)
Suspected stroke / reduced level of consciousness	11 (9.6%)
Abdominal pain / back pain	8 (7.0%)
Unconscious – normal breathing	7 (6.1%)
Urinary tract	4 (3.5%)
Chest pain / cardiac disease	3 (2.6%)
Other (≤2%)	10 (8.8%)



Primary outcome:

- Correct suspicion: 31-minute shorter adjusted time to antibiotics (95% CI −59.9 to −1.8; p=0.038)

Table 4. Association between correct EMDC identification and time from ED arrival to antibiotic administration (linear regression with HC3 robust SE).

	Unadjusted (HC3)			Adjusted (HC3)		
Predictor	**Difference (min)**	**95% CI (HC3)**	**p-value (HC3)**	**Difference (min)**	**95% CI (HC3)**	**p-value (HC3)**
EMDC identification						
Incorrect (reference)	0	—	—	0	—	—
Correct	-31	-58.8, -2.9	0.031	-31	-59.9, -1.8	0.038
Age (years)				0.80	-0.4, 2.1	0.2
Sex						
Male (reference)				—		
Female				-4.1	-35.1, 27	0.8
ED triage priority						
Red (reference)				—		
Orange				13	-19, 44	0.4
Yellow				27	-116.5, 169.7	0.7
TEWS score				-4.3	-9.5, 0.9	0.10

Abbreviation: CI = Confidence Interval

Secondary outcomes:

- Threefold higher odds of administration within 60 minutes (adjusted OR 3.33; 95% CI 1.23–9.31)
- No significant association at 120 minutes (adjusted OR 1.91; 95% CI 0.69–5.74)

Table 5. Association between correct dispatch identification and antibiotic administration within 60 and 120 minutes

		Unadjusted			Adjusted			
Group	**Predictor**	**OR**	**95% CI**	**p-value**	**OR**	**95% CI**	**p-value**	**n/N (%)**
Antibiotics within 60 minutes	**EMDC identification**							
	Incorrect (reference)	—			—			17/70 (24%)
	Correct (sepsis identified)	2.70	1.07-6.86	0.035	3.33	1.23-9.31	0.019	13/28 (46%)
Antibiotics within 120 minutes	**EMDC identification**							
	Incorrect (reference)	—			—			43/70 (61%)
	Correct (sepsis identified)	1.88	0.73-5.32	0.2	1.91	0.69-5.74	0.2	21/28 (75%)

Abbreviations: CI = Confidence Interval, OR = Odds Ratio

CONCLUSION

- EMDC correctly suspected sepsis in only a minority of cases
- When suspicion was raised, it was associated with faster antibiotic administration
- Early dispatch-level identification may improve sepsis care

References

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THANK YOU!