

## Supplementary Online Content

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**eFigure 1.** Adverse events form

**eTable 1.** Characteristics of participating emergency departments

**eTable 2.** Main characteristics in the six centers

**eTable 3.** Per-protocol population

**eTable 4.** Number (%) of adverse events

This supplementary material has been provided by the authors to give readers additional information about their work.



**Known at risk situation**

- Major procedure (Sedation, intubation, ponction) Yes No
- Catecholamine or vasopressor introduction Yes No
- Mechanical ventilation or NIV Yes No
- Total length of stay in the ED > 4 hours Yes No
- Electrolyte disturbances (Dysnatraemia, Dyskalaemia,...) Yes No

**At least one aspect of the ED care is suboptimal**

Yes No

**Suspicion of :**

- Guideline violation (local or national) Yes No
- Medication error Yes No
- Delay for recommended treatment Yes No
- Insufficient monitoring Yes No
- Error in ordering test Yes No
- Delay in ordering test Yes No
- Lack of prevention (eg no LMWH) Yes No

**Supplemental figure 1: adverse events form.**

Center	annual ED census	Number of ED beds	Number of hospital beds	Trauma center	Setting	Trainees (N)	Senior emergency physicians (N)	Mean years in practice of senior emergency physicians
1	40 000	11	500	No	Urban	6	13	5
2	55 000	24	2142	No	Semi rural	15	25	10
3	70 000	37	700	Yes	Urban	12	25	7
4	66 000	22	1800	Yes	Urban	10	25	6
5	60 000	36	620	No	Urban	9	25	6
6	44 000	14	600	No	Urban	7	13	5

**Supplemental Table 1: Characteristics of participating emergency departments.**

All centers were academic emergency departments, adult only, saw both medical and surgical patients and have 24/7 coverage by a senior emergency physician. Trainees are post-graduate young doctors in their 3 to 6 years internship. Senior emergency physicians are board certified physicians who completed their training.

Center No.	Annual census	Age - years mean (SD)		Median waiting time (IQR), minutes		Median length of ED stay (IQR), hours		No comorbidity N (%)		Cross-checked patient N (%)		Medical error N (%)	
		CC	Std	CC	Std	CC	Std	CC	Std	CC	Std	CC	Std
N per center													
1	40 000	57 (21)	58 (24)	01:01 [00:40 ; 01:49]	01:00 [00:34 ; 01:25]	06:33 [04:18 ; 11:56]	06:22 [04:33 ; 10:43]	40 (27)	52 (37)	62 (44)	0 (0)	10 (7)	23 (16)
2	55 000	67 (20)	69 (21)	01:03 [00:32 ; 01:50]	00:46 [00:31 ; 01:08]	12:03 [08:25 ; 18:29]	10:02 [07:29 ; 15:33]	30 (21)	17 (12)	140 (100)	0 (0)	9 (6)	14 (10)
3	70 000	52 (20)	52 (20)	01:08 [00:31 ; 01:52]	01:00 [00:33 ; 02:00]	05:34 [03:12 ; 08:28]	05:48 [04:01 ; 08:24]	46 (33)	45 (32)	80 (57)	0 (0)	12 (9)	20 (14)
4	66 000	53 (21)	56 (21)	00:46 [00:28 ; 01:09]	01:00 [00:33 ; 01:32]	06:20 [03:35 ; 24:02]	07:39 [04:30 ; 24:24]	61 (56)	45 (32)	95 (68)	0 (0)	7 (5)	8 (6)
5	60 000	57 (23)	57 (22)	00:44 [00:24 ; 01:25]	00:44 [00:24 ; 01:39]	06:05 [04:18 ; 08:16]	06:13 [04:14 ; 09:23]	44 (31)	32 (23)	123 (88)	0 (0)	4 (3)	8 (6)
6	44 000	58 (21)	55 (20)	01:04 [00:40 ; 02:07]	01:03 [00:33 ; 01:33]	04:41 [02:59 ; 06:39]	06:03 [04:23 ; 10:08]	23 (14)	30 (21)	73 (52)	0 (0)	12 (9)	17 (12)

**Supplementary table 2:** main characteristics in the six centers. CC: cross checking period. Std: Standard period. IQR: interquartile range

Variable	Cross-check (N=573)	Standard (N=1107)	p
<b>Age</b>	59.9 ± 21.1	56.2 ± 21.9	0.001
<b>Median waiting time, min (IQR)</b>	54 (28 ; 91)	57 (33 ; 97]	0.03
<b>Median length of ED stay, hr (IQR)</b>	7.5 (5.1 ; 12.5)	6.3 (4.1 ; 10.2)	<0.001
<b>Chief complaint, N (%)</b>			<0.001
Cardiovascular	41 (7)	39 (4)	
Respiratory	60 (11)	87 (8)	
Trauma	100 (17)	210 (19)	
Neurological	63 (11)	87 (8)	
Abdominal	49 (9)	86 (8)	
Infection / fever	29 (5)	49 (4)	
Intoxication	4 (1)	18 (2)	
Fatigue, difficulty to cope	41 (7)	87 (8)	
Pain	97 (17)	251 (23)	
Other	89 (16)	193 (17)	
<b>Severity triage level, N (%)</b>			<0.001
1 (most severe)	4 (1)	12 (1)	
2	169 (30)	252 (23)	
3	313 (55)	551 (50)	
4	87 (15)	292 (26)	
<b>Comorbidities</b>			
None	138 (24)	327 (29)	0.02
Cardiovascular	253 (44)	409 (37)	0.004
Respiratory	79 (13)	162 (14)	0.62
Neuromuscular	59 (10)	102 (9)	0.49
Cognitive	39 (6)	64 (5)	0.41
Cancer	69 (12)	113 (10)	0.26
Psychiatric	58 (10)	96 (8)	0.34
Renal	38 (6)	88 (8)	0.33
Liver and guts	59 (10)	105 (9)	0.61
Other	218 (38)	447 (40)	0.33

**Supplementary table 3:** Per-protocol population. Comparison of cross-checked patients and non cross-checked patients. IQR: interquartile range

Variable	Cross check n=54	Standard n=90
<b>Sequence order</b>		
Standard – Cross check	34 (36)	60 (64)
Cross-check - Standard	20 (40)	30 (60)

**Supplementary table 4:** number (%) of adverse events. p=0.49 for period effect and p=0.18 for sequence order.