

## Usability of electronic health record systems in UK emergency departments

### Supplementary material

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#### System Usability Scale

1. I like using the system
2. I find the system unnecessarily complex
3. I think the system is easy to use
4. I need the support of a technical person to use the system
5. I find the various functions in the system are well integrated
6. I think there is too much inconsistency in the system
7. I learned to use the system very quickly
8. I find the system very cumbersome to use
9. I feel very confident using the system
10. I needed to learn a lot of things before I could get going with this system

Each item is scored from 1 (strongly disagree) to 5 (strongly agree).

To calculate the SUS:

1. The score for odd-numbered items is the response minus 1, the score for even numbered items is 5 minus the response. For instance if a respondent had scored question 1 as 3, and questions 2 as 5, the scores would be 2 and 0 respectively. This is because odd numbers are positively framed, and even numbers are negatively framed.
2. Add the calculated scores together.
3. Multiply by 2.5. This gives a score that can range from 0 to 100.

System supplier	No. responses	Median SUS	IQR	No. Org.
Hospedia/Extramed	19	45	31 - 64	4
Patient Centre	18	30	17 - 41	4
TPP/SystemOne	13	38	23 - 50	1
Cambio (Cosmic)	10	28	23 - 58	1
Harris Healthcare (QuadraMed)	9	40	38 - 53	2
LastWord	8	43	31 - 53	1
GE Healthcare	1	88	88 - 88	1
TOPAS	1	61	60 - 60	1
HP Enterprise Services (Swift Plus)	1	44	43 - 43	1
Overall	80	43	38 - 45	16

**Supplementary material table 1. SUS scores from EHRs with < 20 responses.**

EHR Provider	All linked	Separate for blood results	Separate for x-ray	Separate for both	Not linked to either	Total responses
EMIS	34 (9)	7 (2)	124 (35)	140 (39)	53 (15)	358
Cerner	150 (49)	4 (1)	141 (46)	5 (2)	4 (1)	304
DXC	26 (13)	6 (3)	35 (18)	92 (47)	38 (19)	197
System C	57 (37)	2 (1)	67 (44)	19 (12)	9 (6)	154
Intersystems	24 (31)	9 (12)	29 (37)	9 (12)	7 (9)	78
Allscripts	45 (58)	1 (1)	10 (13)	17 (22)	4 (5)	77
Ideagen	6 (9)	2 (3)	8 (12)	34 (51)	17 (25)	67
Meditech	40 (83)	1 (2)	5 (10)	2 (4)	0 (0)	48
NerveCentre	9 (20)	9 (20)	0 (0)	17 (37)	11 (24)	46
Epic	32 (100)	0 (0)	0 (0)	0 (0)	0 (0)	32
Servelec	1 (3)	1 (3)	10 (32)	16 (52)	3 (10)	31
IMS Maxims	19 (63)	4 (13)	2 (7)	5 (17)	0 (0)	30
Silverlink	1 (3)	0 (0)	1 (3)	14 (48)	13 (45)	29
Atos	1 (4)	1 (4)	11 (41)	4 (15)	10 (37)	27
Welsh PAS	7 (33)	0 (0)	3 (14)	7 (33)	4 (19)	21
Total	470 (31)	47 (3)	447 (29)	381 (25)	174 (11)	1499

**Supplementary material table 2. Functionality of viewing investigation results directly from EHR, number responses (%)**

Responses are to the question: *If you are looking at a patient's ED record and want to see blood results or look at an X-ray, can you do that without having to log into a separate system?*

EHR Provider	All linked	Separate for out-patients	Separate for GP	Separate for both	Not linked to either	Total responses
EMIS	21 (6)	29 (8)	30 (8)	162 (45)	117 (33)	359
Cerner	144 (47)	17 (6)	114 (38)	18 (6)	11 (4)	304
DXC	29 (15)	4 (2)	36 (18)	63 (32)	65 (33)	197
System C	31 (20)	7 (5)	49 (32)	41 (27)	26 (17)	154
Intersystems	12 (15)	12 (15)	21 (27)	19 (24)	14 (18)	78
Allscripts	27 (35)	5 (6)	17 (22)	14 (18)	14 (18)	77
Ideagen	3 (4)	7 (10)	8 (12)	29 (43)	20 (30)	67
Meditech	20 (41)	4 (8)	15 (31)	7 (14)	3 (6)	49
NerveCentre	1 (2)	3 (7)	7 (15)	19 (41)	16 (35)	46
Epic	10 (31)	0 (0)	21 (66)	0 (0)	1 (3)	32
IMS Maxims	2 (6)	1 (3)	2 (6)	14 (45)	12 (39)	31
Servelec	1 (3)	1 (3)	5 (16)	17 (55)	7 (23)	31
Silverlink	2 (7)	0 (0)	3 (10)	10 (34)	14 (48)	29
Atos	2 (7)	1 (4)	2 (7)	9 (33)	13 (48)	27
Welsh PAS	5 (24)	2 (10)	7 (33)	5 (24)	2 (10)	21
Total	316 (21)	93 (6)	350 (23)	427 (28)	336 (22)	1502

**Supplementary material table 3. Functionality of viewing out-patients or primary care record, number responses (%)**

Responses are to the question: *If you are looking at a patient's ED record and want to see what happened in outpatients or their GP, can you do that without having to log into a separate system?*



**Supplementary material figure 1. Responses from organisations in UK & British Crown Dependencies.**

Size of spot is proportional to number of responses.