

**Supplement 1. Structure of a part of the narcotic prescription table**

Row	Patient	Drug	Prescription date	Prescription day	MEDD
1	P1	A	****_**-01	5	15
2	P1	B	****_**-01	7	30
3	P1	C	****_**-02	5	20
4	P2	...	...	...	...

MEDD, morphine equivalent daily dose.

**Supplement 2. Structure of a part of the modified narcotics prescription table according to each intake date to calculate overlapping MEDD**

Row	Patient	Drug	Prescription date	Prescription day	MEDD	Intake date	Overlapping MEDD
1	P1	A	****_**-01	5	15	****_**-01	45
2	P1	A	****_**-01	5	15	****_**-02	45
3	P1	A	****_**-01	5	15	****_**-03	45
4	P1	A	****_**-01	5	15	****_**-04	65
5	P1	A	****_**-01	5	15	****_**-05	65
6	P1	B	****_**-01	7	30	****_**-01	45
7	P1	B	****_**-01	7	30	****_**-02	45
8	P1	B	****_**-01	7	30	****_**-03	45
9	P1	B	****_**-01	7	30	****_**-04	65
10	P1	B	****_**-01	7	30	****_**-05	65
11	P1	B	****_**-01	7	30	****_**-06	50
12	P1	B	****_**-01	7	30	****_**-07	50
13	P1	C	****_**-04	5	20	****_**-04	65
14	P1	C	****_**-04	5	20	****_**-05	65
15	P1	C	****_**-04	5	20	****_**-06	50
16	P1	C	****_**-04	5	20	****_**-07	50
17	P1	C	****_**-04	5	20	****_**-08	20
18	P2	...	...	...	...	...	...

MEDD, morphine equivalent daily dose.

**Supplement 3. Partial list of doctor outliers of the wt-MEDD score**

<b>Rank</b>	<b>Doctor (de-identified)</b>	<b>Department (de-identified)</b>	<b>Prescription number</b>	<b>Percentage compared to the mean value (%)</b>	<b>Outlier scores (Z score)</b>	<b>Converted P-value</b>	<b>Is outlier?</b>
1	*	*	*	*	60.678442	< 0.000001	TRUE
2	*	*	*	*	39.274941	< 0.000001	TRUE
3	*	*	*	*	33.336398	< 0.000001	TRUE
4	*	*	*	*	26.614296	< 0.000001	TRUE
5	*	*	*	*	13.994891	< 0.000001	TRUE
6	*	*	*	*	12.469015	< 0.000001	TRUE
7	*	*	*	*	8.056348	< 0.000001	TRUE
8	*	*	*	*	6.612952	< 0.000001	TRUE
9	*	*	*	*	5.788154	< 0.000001	TRUE
10	*	*	*	*	5.540715	< 0.000001	TRUE
11	*	*	*	*	5.375755	< 0.000001	TRUE
12	*	*	*	*	5.252035	< 0.000001	TRUE
13	*	*	*	*	4.757157	0.000002	TRUE
14	*	*	*	*	4.179798	0.000029	TRUE
14	*	*	*	*	4.179798	0.000029	TRUE
15	*	*	*	*	4.014839	0.000059	TRUE
16	*	*	*	*	3.973599	0.000071	TRUE
17	*	*	*	*	3.932359	0.000084	TRUE
18	*	*	*	*	3.808639	0.000140	TRUE
18	*	*	*	*	3.808639	0.000140	TRUE
19	*	*	*	*	3.767400	0.000165	TRUE
20	*	*	*	*	3.684920	0.000229	TRUE
21	*	*	*	*	3.643680	0.000269	TRUE
22	*	*	*	*	3.355001	0.000794	TRUE
23	*	*	*	*	3.313761	0.000921	TRUE

wt-MEDD, weighted morphine equivalent daily dose.

\*Masked because it is sensitive information.