

Supplemental text document 1:

Survey on measurement accuracy of new technologies for measuring blood pressure compared with the clinical gold standard (invasive arterial catheter)



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Dear colleagues,

before new patient monitors find its way into clinical routine, you as physicians need to be confident that the measured vital parameters – e.g. blood pressure - can reliably be compared with the established methods for blood pressure measurement (invasive arterial catheter, oscillometry).

By filling in the following tables you will help us to develop objective statistical methods for the comparability of novel blood pressure measurement technologies with the clinical gold standard (invasive arterial catheter).

Mean blood pressure

1. Please consider blood pressure measurements in patients during your daily clinical practice. Define 5 ranges of blood pressure values for associated actions (i.e. a lower and upper limit in mm Hg) for the mean blood pressure.

Mean Blood Pressure Ranges and Associated Actions		
Code	Action	range (from..to..mmHg)
1	Emergency treatment for <i>low</i> blood pressure	
2	Treatment of low blood pressure appropriate	
3	No action needed	
4	Treatment of high blood pressure appropriate	
5	Emergency treatment for <i>high</i> blood pressure	

2. Imagine, the patient's mean blood pressure is measured simultaneously with a clinical gold standard (invasive arterial catheter) and a "novel blood pressure measurement technology. Please assign the new technology's measured deviations (= error) from the true blood pressure value (measured invasively, using an arterial catheter) to a degree of risk (A, none; B, low risk; C moderate risk; D, significant risk; E, dangerous).

Degree of Risk Form for the Mean Blood Pressure			
The novel technology's measurement is in range CODE	You are taking the following action	Actual value (measured by invasive arterial catheter) is in range	Degree of risk (A,B,C,D or E) <i>Assign degree of risk below</i>
1	Emergency treatment for <i>low</i> blood pressure	1	A
		2	
		3	
		4	
		5	
2	Treatment of low blood pressure appropriate	1	
		2	A
		3	
		4	
		5	
3	No action needed	1	
		2	
		3	A
		4	
		5	
4	Treatment of high blood pressure appropriate	1	
		2	
		3	
		4	A
		5	
5	Emergency treatment for <i>high</i> blood pressure	1	
		2	
		3	
		4	
		5	A

Systolic blood pressure

1. Please consider blood pressure measurements in patients during your daily clinical practice. Define 5 ranges of blood pressure values for associated actions (i.e. a lower and upper limit in mm Hg) for the systolic blood pressure.

Systolic Blood Pressure Ranges and Associated Actions		
Code	Action	range (from..to..mmHg)
1	Emergency treatment for <i>low</i> blood pressure	
2	Treatment of low blood pressure appropriate	
3	No action needed	
4	Treatment of high blood pressure appropriate	
5	Emergency treatment for <i>high</i> blood pressure	

2. Imagine, the patient's systolic blood pressure is measured simultaneously with a clinical gold standard (invasive arterial catheter) and a "novel blood pressure measurement technology. Please assign the new technology's measured deviations (= error) from the true blood pressure value (measured invasively, using an arterial catheter) to a degree of risk (A, none; B, low risk; C moderate risk; D, significant risk; E, dangerous).

Degree of Risk Form for the Systolic Blood Pressure			
The novel technology's measurement is in range CODE	You are taking the following action	Actual value (measured by invasive arterial catheter) is in range	Degree of risk (A,B,C,D or E) <i>Assign degree of risk below</i>
1	Emergency treatment for <i>low</i> blood pressure	1	A
		2	
		3	
		4	
		5	
2	Treatment of low blood pressure appropriate	1	
		2	A
		3	
		4	
		5	
3	No action needed	1	
		2	
		3	A

		4	
		5	
4	Treatment of high blood pressure appropriate	1	
		2	
		3	
		4	A
		5	
5	Emergency treatment for <i>high</i> blood pressure	1	
		2	
		3	
		4	
		5	A