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ORIGINAL ARTICLE

Trust in Dutch intensive care networks: the results of a survey

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Abstract

Introduction: Dutch ICUs have been enrolled in network organisations since the Quality Standard of 2016. In networks, intensivists have to cooperate to provide a high quality of care for all patients in their network. Trust is essential to cooperate effectively in a network. It is unknown what the degree of trust is in Dutch ICU networks.

Methods: A survey was composed using the questionnaire by Cummings, measuring the experience of trust, and the questionnaire by Currall, measuring the willingness to show behaviour that is consistent with trust. Two overall questions concerning the feeling of being part of the network and the overall level of trust were added. All questions were answered on a 7-point Likert scale. Network managers passed the questionnaire to intensivists in the network.

Results: The overall level of trust showed a mean of 5.5 (SD 1.2), similar to the mean of the Cummings questionnaire (5.3; SD 0.9). Academic intensivists had a significantly higher level of trust than intensivists from other hospitals (5.9 vs 5.0 and 5.3; p=0.009). The questions covering 'surveillance', which measures the need for control, scored lowest with 3.8 (SD 1.3). Intensivists feel the need to make formal agreements and they experience a relatively intense need to control these agreements.

Conclusion: Intensivists experience a reasonable level of trust within their network. However, intensivists feel the need to make formal agreements and they experience a relatively intense need to control these agreements. This suggests that the actual trust is conditional. Academic intensivists showed the highest level of trust.

Introduction

In 2015, Dutch medical associations did not succeed in developing a guideline for the organisation and quality of adult intensive care units. As a result, the Quality Institute defined a Quality Standard in 2016.[1] An important recommendation in this standard is that intensive care departments must work together in networks.

Collaboration in a network is, following the Quality Standard, not only necessary for intensive care units (ICUs) but has consequences for intensivists as well. Intensivists will have to communicate and cooperate with other intensivists from ICUs in the network. Different types of network governance have been shown to be successful, although none have been investigated in an acute care setting.[2] Research on network cooperation between intensive care units is virtually lacking. In the Netherlands, current cooperation is mainly based on professional equality between intensivists from the cooperative ICUs. An important aspect in this cooperation is trust.[2] Trust is a condition that is present in the network as an organisational form, between ICUs and between individual intensivists. Trust has many definitions. Sobel defined trust as 'the willingness to permit the decisions of others to influence your welfare'.[3] In the intensive care network setting trust is the willingness to permit other intensivists and other ICUs to influence your work processes and maybe even patient outcomes.

In this study we explored trust within Dutch intensive care network cooperation as it is being experienced by intensivists. We studied whether available validated questionnaires regarding trust are applicable to the Dutch intensive care network setting and what the degree of trust is.

Methods

Questionnaires were sent to intensivists in the Netherlands in an online survey tool (SurveyMonkey®) as a 'closed survey'. We sent a link to the online questionnaire to the coordinating intensivist of the network or to the network coordinator with the request to send this questionnaire to all intensivists in the network. Reminders were not sent and incentives were not offered. Data collection was closed after approximately six months. As patients were not involved and the questionnaire was voluntary, institutional review board approval and informed consent was not necessary. The respondents were anonymous for the researchers; data are securely stored and unavailable to others than the researchers.

Questionnaires

A number of validated questionnaires that measure trust between organisations within a partnership are available.[4,5] The questionnaires from Cummings[4] and Currall[5] are complementary in the measurement of trust within organisations that cooperate. In particular, Cummings determines the experience of trust and Currall determines the willingness to show the behaviour which is appropriate in case of trust. In addition, Currall classifies the questions by category of communication, informal agreement and control (surveillance). Currall also describes two categories about executives in the partnership. These two categories turned out to have little relevancy for the current intensive care networks so these questions were deleted in the present study. The questions from the original lists of both Cummings and Currall were translated into Dutch as precisely as possible.

In addition to the validated questionnaires, two summarising questions were asked about the network. Firstly 'I feel part of the network' and secondly 'How much trust do you have in the network in general?'

Measurement scale

A 7-point Likert scale was used for all questions. A number of questions were asked in a positive sense regarding trust in the network and a number were asked in a negative way. The negative questions were coded in reverse before the analysis to ensure that higher scores in the results are always indicative of a higher level of trust.

Statistics

Descriptive statistics were calculated for all measured variables and individual questions. Data are given as mean and standard deviation (SD) in case of normal distribution. For other distributions median and interquartile range (IQR) are given. Groups were compared with the Mann-Whitney U test, Fisher's exact test, Wilcoxon or Kruskal-Wallis test where appropriate.

The internal consistency using the Cronbach alpha was determined for the three categories of the Currall questionnaire and for the Cummings questionnaire. Cronbach alpha was interpreted as follows: 0.81 to 1.00 very high, 0.61 to 0.80 high, 0.41 to 0.60 medium, 0.21 to 0.40 low and 0.01 to 0.20 very low. In case of a Cronbach alpha lower than 0.6, one or more questions were removed in order to increase the internal consistency to a value to 0.6 or higher.

Correlation was determined using Pearson's correlation coefficient. In all tests, a two-sided alpha of 5% was taken as significance level.

Table 1. Baseline characteristics of the respondents

Variable	Result
Age	
30-40	24%
40-50	48%
50-60	23%
>60	5%
Gender M (%)	**72%**
Work experience (years)	
<5	22%
5-10	28%
10-15	26%
>15	24%
Number of ICUs in the network, mean (SD)	**7.5 (2.6)**
Type of hospital	
Academic	22%
Top clinical	56%
General	22%

SD = standard deviation

Results

Baseline

Fifteen intensive care networks were formed after the Quality Standard was implemented. Eight networks are centred around an academic hospital. The questionnaire was presented to the network managers with the request to offer the link to the intensivists in the network. Therefore, it is unknown how many intensivists received the survey. Eighty-five anonymous surveys were completed and analysed online.

The baseline results are summarised in *table 1*. In summary, 72% were male and 48% of the respondents were in the category 40-50 years. Academic intensivists and intensivists from the smaller hospitals affiliated with the cooperating general hospitals (in Dutch the SAZ) were equally represented and intensivists from the larger cooperating top clinical hospitals (in Dutch the STZ) represented 56% of the respondents. The work experience, measured in categories of five years, was more or less equally divided across all categories in numbers of respondents (*table 1*).

Internal consistency and validity

After removing one question in the communication category of the Currall questionnaire, the Cronbach alpha increased from 0.44 to 0.6. For the category informal agreement, removing one

Table 2. Results of the questionnaires adapted from Currall and from Cummings

Original English text	Translated Dutch text	Questionnaire	Mean	SD	Median	IQR
I give to the network all known and relevant information about important issues even if there is a possibility that it might jeopardise the network	Ik geef binnen het netwerk alle mij bekende en relevante informatie over belangrijke zaken, ook als er een kans bestaat dat dit het IC netwerk benadeelt	Communication (Currall)	4.4	1.3	4.0	4-5
I give to the network all known and relevant information about important issues even if there is a possibility that it might jeopardise my job as intensivist in the network	Ik geef binnen het netwerk alle mij bekende en relevante informatie over belangrijke zaken, ook als er een kans bestaat dat dit mijn baan als intensivist binnen het IC netwerk benadeelt	Communication (Currall)	4.0	1.5	4.0	3-5
I minimise the information I give to the network	Ik minimaliseer de informatie die ik aan het IC netwerk geef	Communication (Currall)	5.4	1.3	6.0	4-6
I deliberately withhold some information when communicating within the network	Ik houd opzettelijk sommige informatie achter wanneer ik communiceer in het IC netwerk	Communication (Currall)	5.8	1.2	6.0	5-7
		All communication	4.9	0.9	5.0	4.3-5.5
I enter into an agreement with the network even if his/her future obligations concerning the agreement are not explicitly stated.	Ik ben bereid om een overeenkomst met het IC netwerk aan te gaan ook als de toekomstige verplichtingen betreffende de overeenkomst niet uitdrukkelijk bekend/geformuleerd zijn.	Informal agreement (Currall)	3.7	1.6	4.0	2-5
I enter into an agreement with the network even if I think other people might try to persuade someone to break the network agreement	Ik ben bereid om een overeenkomst met het netwerk aan te gaan, ook als ik denk dat iemand zal proberen anderen binnen het IC netwerk over te halen dit te dwarsbomen	Informal agreement (Currall)	4.3	1.4	4.0	4-5
I enter into an agreement with the network even if it is unclear whether the network would suffer any negative consequences for breaking it	Ik ga een overeenkomst aan met het IC netwerk ook al is het onduidelijk of het netwerk negatieve consequenties ondervindt bij het verbreken er van.	Informal agreement (Currall)	3.9	1.2	4.0	3-4
I decline the network's offer to enter into an unwritten agreement	Ik wijs een uitnodiging aan een ongeschreven overeenkomst binnen het IC netwerk af.	Informal agreement (Currall)	5.3	1.5	5.0	4-7
		All Informal agreement	4.3	1.0	4.3	3.5-4.8
I watch the intensivists in the network attentively in order to make sure that they do not do something detrimental to the network	Ik bekijk de intensivisten in het netwerk aandachtig om er zeker van te zijn dat hij/zij niks schadelijks doet voor het netwerk	Surveillance (Currall)	4.3	1.5	4.0	4-5
I keep surveillance (i.e. look over the shoulder) over the network after asking the network to do something	Ik houd het IC netwerk in de gaten nadat ik het netwerk gevraagd heb om iets uit te voeren. (Over de schouder meekijken)	Surveillance (Currall)	3.8	1.3	4.0	3-4
I check with other people about the activities of the network to make sure the network is not trying to 'get away' with something	Ik vraag bij collega intensivisten na of de activiteiten van het IC netwerk worden uitgevoerd, om ervoor te zorgen dat het niet blijft liggen	Surveillance (Currall)	3.5	1.1	3.0	3-4
In situations other than contract negotiations, I check records to verify facts stated by the network	In situaties anders dan contractonderhandelingen controleer ik de documenten om de door het IC netwerk genoemde feiten te controleren	Surveillance (Currall)	3.5	1.4	4.0	2.2
		All surveillance	3.8	1.0	3.5	3.3-4.3
I think that people in the network tell the truth in negotiations	Ik denk dat mensen binnen het IC netwerk de waarheid spreken in onderhandelingen	Cummings	4.9	1.1	5.0	4-6
I think that the network meets its negotiated obligations to our department	Ik denk dat het IC netwerk haar onderhandelde verplichtingen aan onze afdeling tegemoet komt	Cummings	5.2	1.1	5.0	4-6
In my opinion, the network is reliable	Ik ben van mening dat het IC netwerk betrouwbaar is	Cummings	5.4	1.0	5.0	5-6
I think that the people in the network succeed by stepping on other people	Ik denk dat mensen in het IC netwerk succesvol zijn ten koste van anderen	Cummings	5.3	1.1	5.0	4-6
I thinkthat the network takes advantage of our problems	Ik denk dat het IC netwerk voordeel haalt uit de problemen van onze afdeling	Cummings	4.9	1.6	5.0	4-6
I think that the network will keep its word	Ik heb het gevoel dat het IC netwerk zich aan zijn woorden houdt	Cummings	5.3	1.0	5.0	4-6
I think the network does not mislead us	Ik heb het gevoel dat het IC netwerk onze afdeling niet misleidt	Cummings	5.3	1.2	5.5	4-6
I feel that the network tries to get out of its commitments	Ik heb gevoel dat het IC netwerk probeert om onder haar verplichtingen uit te komen	Cummings	5.8	1.3	6.0	6-7
I feel that the network negotiates joint expectations fairly	Ik heb het gevoel dat het IC netwerk onze gezamenlijke verwachting eerlijk uit onderhandelt.	Cummings	5.2	1.0	5.0	4-6
I feel that the network takes advantage of people who are vulnerable	Ik heb het gevoel dat het IC netwerk voordeel haalt ten koste van kwetsbare afdelingen	Cummings	5.5	1.3	6.0	4-7
		All Cummings	5.3	0.9	5.4	4.6-5.9
I feel part of the network	Ik voel me onderdeel van het netwerk	Overall part of the network	5.1	1.8	6.0	4-7
How much trust do you have in the network in general?	Hoe groot is uw vertrouwen in het netwerk in het algemeen	Overall trust	5.5	1.2	6.0	5.0-6.0

question improved the Cronbach alpha from 0.56 to 0.68. In the surveillance category, the removal of one question improved the Cronbach alpha from 0.56 to 0.66. The Cummings list had a very high Cronbach alpha of 0.94 after reduction of the numbers of questions from 12 to 10. *Table 2* summarises the results of the questionnaire.

Results of the questionnaires

The questions regarding sharing of information and regarding conducting transparent communication scored an average of 4.9 out of 7 on all questions and respondents. The questions on formal or informal agreements scored an average of 4.3 and the questions about exercising surveillance scored a 3.8 on average (*table 2*).

Trust in the communication category was significantly higher than in the agreement category ($p<0.001$) and also higher than in the surveillance category ($p<0.001$). The agreement category scored significantly higher than surveillance ($p=0.025$).

The Cummings questionnaire scored an average of 5.3 on all seven questions of all respondents on a scale of 7.

The question concerning overall trust in the network was rated with an average of 5.5 on a scale of 7. The feeling of being part of the network scored an average of 5.1. Gender and age were unrelated to these outcomes. The analysis per hospital type showed that intensivists from academic hospitals expressed a significantly higher level of trust than those from top clinical and general hospitals (STZ and SAZ) hospitals respectively (5.9 vs 5.0 vs 5.3; $p=0.009$).

Correlation

In a correlation matrix, the Cummings questionnaire showed the highest correlation with the level of overall trust ($r^2=0.28$). The two general questions concerning feeling part of the network and overall level of trust correlated best with $r^2=0.38$.

The analysis of the baseline variables and the questionnaires showed that age was unrelated to the mean score of all questions of the Cummings questionnaire ($p=0.06$) but the overall level of trust was highest in intensivists of age category 40-50 years ($p=0.019$). Gender was unrelated to the mean score of all questions of the Cummings questionnaire ($p=0.54$) and to the mean overall level of trust ($p=0.32$).

Discussion

This study shows that intensivists experience a reasonable level of trust within their network.

Our study on trust within intensive care networks in the Netherlands is a first cautious attempt to quantify research concerning the level of trust between intensive care units and intensivists. With our study, we have shown that the Cummings questionnaire is the most consistent questionnaire in this setting. This questionnaire focuses on the experience of trust. The final question on the overall level of trust in the network is in fact a measurement of the perception of trust. It is therefore expected that the Cummings questionnaire and the question to the overall level on trust show the highest correlation with each other. The questions in the Currall questionnaire determine whether the respondents concede to displaying behaviour that is consistent with a high level of trust. This questionnaire shows that intensivists feel the need to make formal agreements and they experience a relatively intense need to control these agreements. This in itself does not tell us whether there is actual trust. Moreover, it is uncertain to what extent socially desirable answers have been given.

Altogether, there appears to be a reasonable degree of perception of trust within intensivists who work together in an intensive care network. This is also apparent from the question on the overall level of trust. Academic intensivists have significantly more trust in the network than intensivists from other hospitals. The scores measuring the degree of behaviour associated with trust that intensivists want to show are between 3.8 and 4.9, which is slightly lower than the scores on the experience of trust. This behaviour manifests more in the communication category than in other categories. Signs of lower levels of trust are the need that intensivists feel to make formal agreements and that intensivists experience a relatively intense need to control these agreements. In fact, the surveillance category shows that control is important, which suggests that the actual trust is conditional[6] and needs confirmation by applying surveillance measures. Conditional trust is trust that persists when behaviour is consistent with the expectations. Apparently, this consistency is checked by formal agreements and their control.

The response rate is limited, which may have affected the results. On the other hand, the distribution of the intensivists is representative in work location and age. We translated the questions into Dutch. *Table 2* shows both Dutch and English questions. This translation might have affected the validity of the questionnaires. However, the internal consistency, shown by Cronbach alpha, was sufficient for the Dutch questionnaires. Several factors drive the level of trust. Expertise, benevolence or intention and integrity are the main drivers.[7] We did not study which of these drivers is key in the development of trust in intensive care networks. The construct of trust also implies a risk that is taken in the future.[7] In the network setting, intensivists in the network are more or less willing to take this risk in future situations when cooperation is needed. Our finding that agreements and controlling the agreements are important can be seen as ways to minimise the risk within the network cooperation.

This research leaves many questions unanswered and raises several new questions. It should therefore be seen as a first exploratory study of possible methods to be used and to measure the level of trust in intensive care networks.

Conclusion

Intensivists experience a reasonable level of trust within their network. The behaviour that demonstrates trust mainly concerns communication and exchange of information. Signs of lower levels of trust are the need that intensivists feel to make formal agreements and that intensivists experience a relatively intense need to control these agreements. Academic intensivists showed the highest level of trust.

Disclosures

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