BASEL INSTITUTE ON GOVERNANCE

Adopting a peer-led approach to disseminate anti-corruption messages

Results of the network survey

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1 Method

This report presents additional insights about the dissemination of an intervention to reduce gift-giving in a Tanzanian public hospital. The intervention, the study design and the outcomes are described here:

> Baez Camargo, Claudia, Violette Gadenne, Veronica Mkoji, Dilhan Perera, Ruth Persian, Richard Sambaiga, and Tobias H. Stark. 2022. "Using behavioural insights to reduce gift-giving in a Tanzanian public hospital: Findings from a mixed-methods evaluation." Basel Institute on Governance. Available at: https://baselgovernance.org/publications/TZ-giftgiving.

We used social network analysis (SNA) to assess *after* the intervention took place how the information about the intervention was disseminated through the hospital. Social network analysis is the mapping and measuring of relationships and information flows between people, groups, or organizations. In this project, we encouraged trained champions to inform their colleagues about the intervention. We then followed up with a sample of these champions to evaluate how they made use of their social network within the hospital to disseminate information. We also interviewed non-champion providers to examine through which communication channels they learned about the intervention. This approach highlights the opportunities and challenges of the champion approach to disseminate information about a gift-giving intervention in a hospital.

In the social network survey of this project, we mapped who talks to whom about the gift-giving intervention within treatment departments and to what extent providers perceive support or opposition to the intervention among their colleagues. We also examined how frequently the participants talk to their colleagues and what kind of relationship they have with each other. This allows understanding through which communication channels information about the intervention travels among medical professionals.

We also mapped the communication of medical professionals with colleagues from other, non-intervention, departments. Asking questions about whom they talked to about the intervention outside of the treatment department allows for mapping how information about the intervention is disseminated in the wider hospital.

The network survey was implemented in the software Network Canvas. During the qualitative interviews, enumerators presented a tablet computer to the providers and asked them to complete the survey on the tablet. The survey contained a preloaded list of all hospital employees from which the providers could select the colleagues with whom they talked regularly. Subsequently, they could answer questions about their colleagues (e.g., with whom they had talked

about the intervention) by dragging and dropping the names of the colleagues into answer buckets (see Figure 1).

Figure 1: An illustration of the network survey in Network Canvas. Participants could indicate how often they talked to each colleague by moving their names into answer buckets.

To get an understanding of how information about the intervention was disseminated to other departments in the hospital, providers were asked to indicate which of their colleagues in other departments talked to each other as well. This created a graphical representation of the providers' social networks across the hospital (see Figure 2).

The complete questionnaire (without figures) can be found in the appendix.

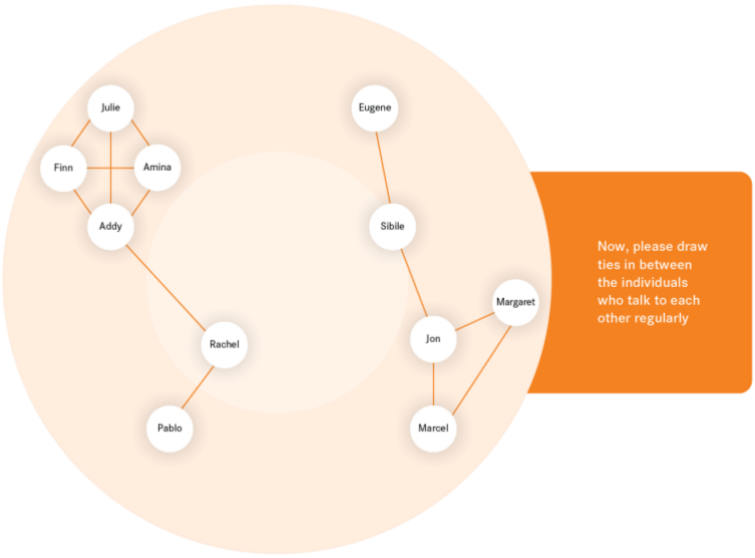


Figure 2: Participants could indicate who of their colleagues in other departments talked to each other by drawing lines between them.

The data were analyzed with a mixed-methods approach. This approach entails, on the one hand, descriptive statistics of a) the type of relationships that are used to disseminate information and b) who are those individuals that are likely to communicate with colleagues about the intervention. On the other hand, the analysis also utilized graphical representations of the network structure that underlies medical professionals' communication patterns. To understand providers' use of their social networks, the network survey was accompanied by qualitative interviews. The analysis of the network survey was thus supplemented by the qualitative narrative the providers gave about their experience with the intervention.

In the following pages, we discuss in three sections the results of the network survey among (1) champions, (2) non-champion providers who work in intervention departments, and (3) providers from non-intervention departments. Each section ends with a brief overview of the most important conclusions.

2 Results

2.1 Champions

The network survey was conducted among 8 of the 21 trained champions. The champions were first asked about their experience with informing their direct colleagues about the intervention. Secondly, the champions were asked to identify colleagues with whom they talk regularly and who work in other departments. This allows mapping the dissemination of the intervention across the hospital.

2.1.1 Champions – direct colleagues in the same department

Table 1 shows how often the champions have talked about the intervention with each of their colleagues. Results show that the champions talked to most of their colleagues about the intervention. Of the eight champions, six talked to ten or more direct colleagues about the intervention. However, in about half of the cases, champions had only one or two conversations about the intervention with their colleagues.

Champion ID	N colleagues	Frequency of talking about intervention			
		Never	*Once or twice*	*Multiple times*	*Missing**
CH1	9	0	3	6	0
CH2	20	10	10	0	0
CH3	8	0	0	8	0
CH4	19	0	14	5	0
CH5	16	0	8	8	0
CH6	62	25	11	17	9
CH7	11	2	3	6	0
CH8	19	0	9	10	0
Total	186	37	58	60	9

Table 1: Frequency of talking about the intervention with colleagues from the intervention departments

*Note: * The champion skipped to the next question without answering for the last 9 colleagues.*

One of the central questions we wanted to address was:

> ***How did the champions utilize their social network (social capital) to disseminate information about the intervention?***

To this effect, we explored three aspects of the network that might enhance the likelihood to talk about the intervention: (1) the frequency with which champions talked to each colleague, (2) the quality of their interpersonal relationship in terms of relationship closeness, and (3) whether the colleague had a similar occupation (horizontal tie) or a different occupation (vertical tie).

Results show:

- Champions were significantly more likely to talk to colleagues about the intervention, the more frequently they talked with these people in general ($r = .43$, $p < .001$)[1].
- Champions were significantly more likely to talk to colleagues about the intervention, the closer their relationship was with these people ($r = .52$, $p < .001$).

1 The tests for statistical significance are based on fixed-effects models that account for the repeated observations within champions.

- Although there is a tendency that most champions talked with many colleagues who had the same profession (e.g., nurses with other nurses), all champions made use of many horizontal ties (see Table 2). One champion (CH1) talked almost exclusively to colleagues in the same profession. However, all other champions talked to equally many, if not more, colleagues who had different professions.

ID	Profession champion	Colleague's profession					
		Nurse	*Doctor*	*Pharmacist*	*Health Assistant*	*Technician*	*Admin.*
CH1	Nurse	7	1				1
CH2	Pharmacist	1	4	2	2	1	
CH3	Doctor	6			2	1	
CH4	Doctor	4	8	3	1	3	
CH5	Technician	5	3		1	5	2
CH6	Nurse	12	8	1	4	3	
CH7	Nurse	2	1		1	5	
CH8	Technician	2	4	2	2	8	1

Table 2: Profession of colleagues in the same department (only those colleagues with whom the champion talked about the intervention).

Did the champions face opposition?

According to the champions' own observation, almost all the colleagues they talked to about the intervention were also supportive of the intervention. 89 colleagues were supportive of the intervention and only 5 were neutral (neither positive nor negative). Champions also reported not knowing the attitude of 4 colleagues even though they talked with them about the intervention.[2] This suggests that the champions encountered a positive social norm in favor of an intervention to reduce gift giving.

2.1.2 Champions – dissemination to other departments

To map the dissemination of the intervention across the hospital, we asked the champions to point out those colleagues from other departments with whom they talked regularly.

2 One champion (CH 6) named 62 colleagues but did not indicate a response for 54 of these colleagues. Most likely because having to answer the same question 62 times was too time consuming. `

Subsequently, we asked for each of these colleagues how often the champions had talked with them about the intervention. Table 3 shows that the champions had talked to all of the colleagues from other departments about the interventions. This involved multiple conversations for more than half of these colleagues.

Champion ID	N colleagues	Frequency of talking about intervention		
		Never	Once or twice	Multiple times
CH1	4	0	4	0
CH2	6	0	6	0
CH3	2	0	0	2
CH4	2	0	0	2
CH5	18	0	9	9
CH6	4	0	0	4
CH7	2	0	0	2
CH8	12	0	4	8
Total	50	0	23	27

Table 3: Frequency of talking about the intervention with colleagues in other departments.

How did the champions utilize their social network to disseminate information about the intervention?

- Conversation frequency: Champions talk significantly more often (mean = 4.07 on a scale from 1 to 5) with colleagues with whom they had talked about the intervention multiple times. They spoke less frequently in general (mean = 3.39, p = 0.013) with colleagues with whom they had only one or two conversations about the intervention. This suggests that conversations about the interventions were often rather of an opportunistic rather than deliberate nature.
- No difference in relationship quality: champions feel almost equally close to colleagues with whom they have talked only once or twice (mean = 3.43) or multiple times about the intervention (mean 3.59, p = .898). This, again, suggests that champions mainly disseminated information about the intervention when they had the opportunity to do so and not when they encountered close contacts.

Did the champions face opposition in other departments?

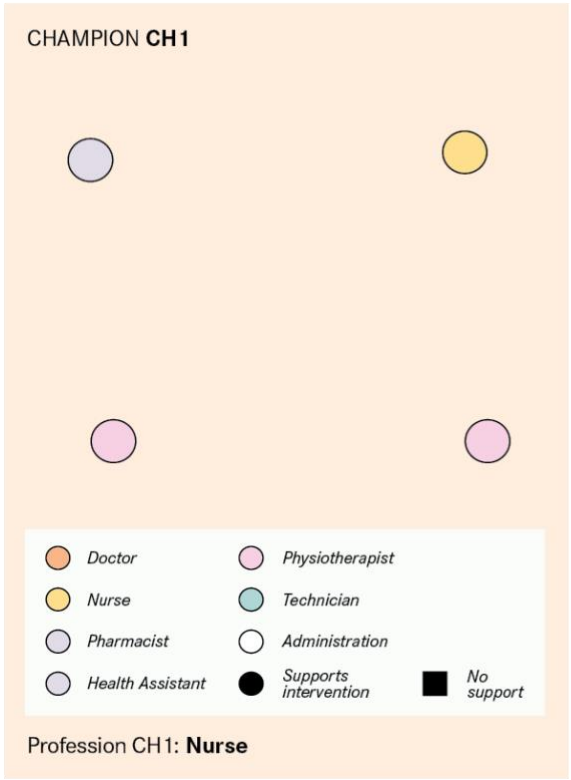
Almost everybody the champions talked to supports the intervention (42 of 50). Seven people were neutral and only one person opposed the intervention.

What type of social capital did champions utilize to disseminate the intervention across departments?

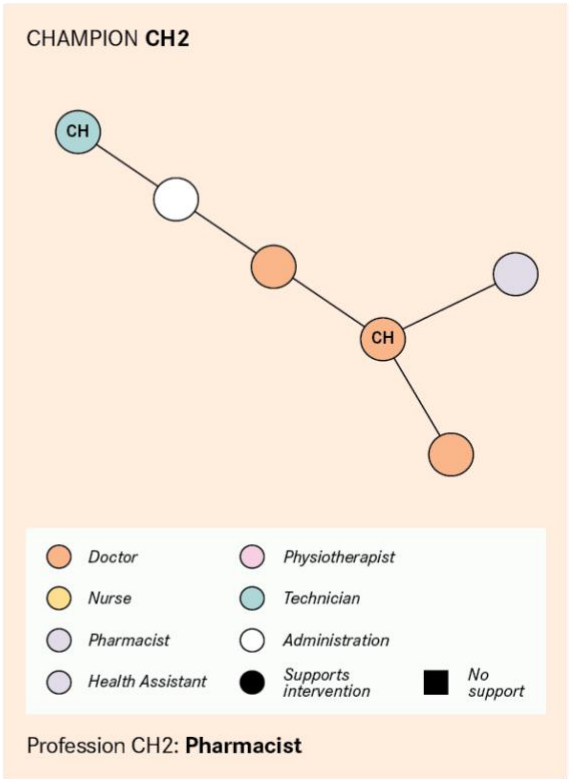
Figure 3 visualizes the social network of each champion across the hospital. The color of each node indicates the colleague's profession (e.g., red nodes represent doctors). The shapes of the nodes indicate whether a colleague is supportive of the intervention (circle) or not (square). Lines between nodes indicate whether these people talk regularly with each other.

Results indicated:

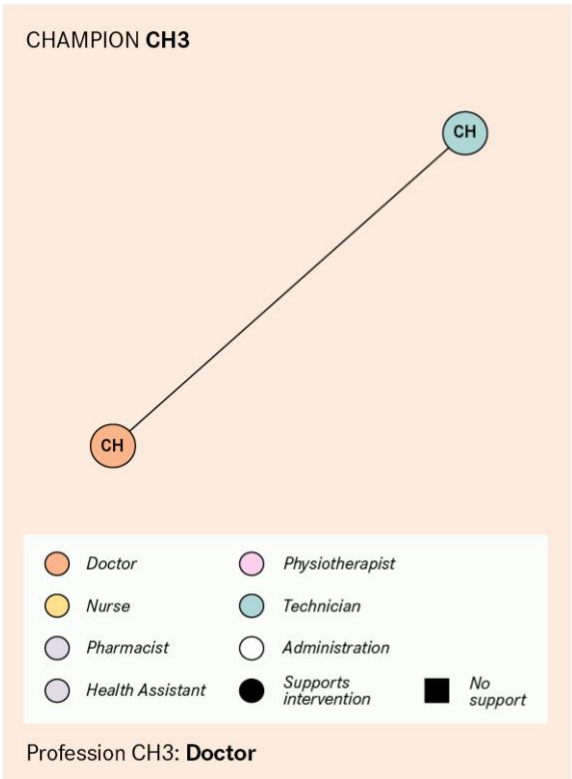
- Dissemination takes place mainly via horizontal ties: Unlike the within-department conversations, conversations across departments take mainly place within the same profession. That is, nurses are unlikely to talk to doctors and doctors are unlikely to talk to nurses in other departments.
- Dissemination via vertical ties (to other professions) is mainly done by technicians (CH 5 and CH 8). They are more likely to talk to people with other professions than doctors and nurses.
- The two technicians (CH 5 and CH 8) not only reached the most diverse set of professions but have also directed their communication at several small unconnected clusters of colleagues. This suggests that their dissemination had a wide reach to different parts of the hospital.
- Support among champions: Except for two champions, all others had conversations about the intervention with other champions. This is in line with our encouragement of supportive conversations among champions.
- Often, dissemination to other departments was directed at colleagues who were also connected to other champions – this may have helped reinforce the message.
- Clustered dissemination: Most champions have directed the dissemination at one group of colleagues who also talk to each other. Less than half of the champions (CH 1, CH 5, CH8) have addressed individuals or several small groups who do not talk to each other.



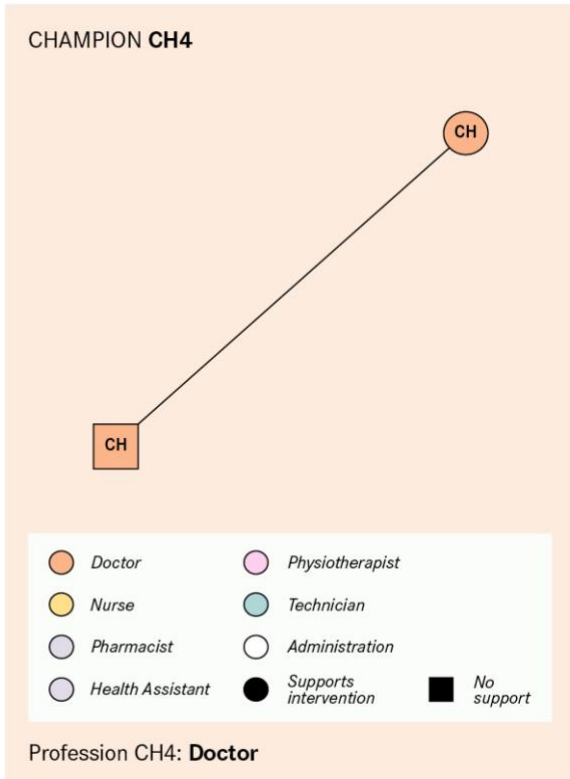
Profession CH1: **Nurse**



Profession CH2: **Pharmacist**



Profession CH3: **Doctor**



Profession CH4: **Doctor**

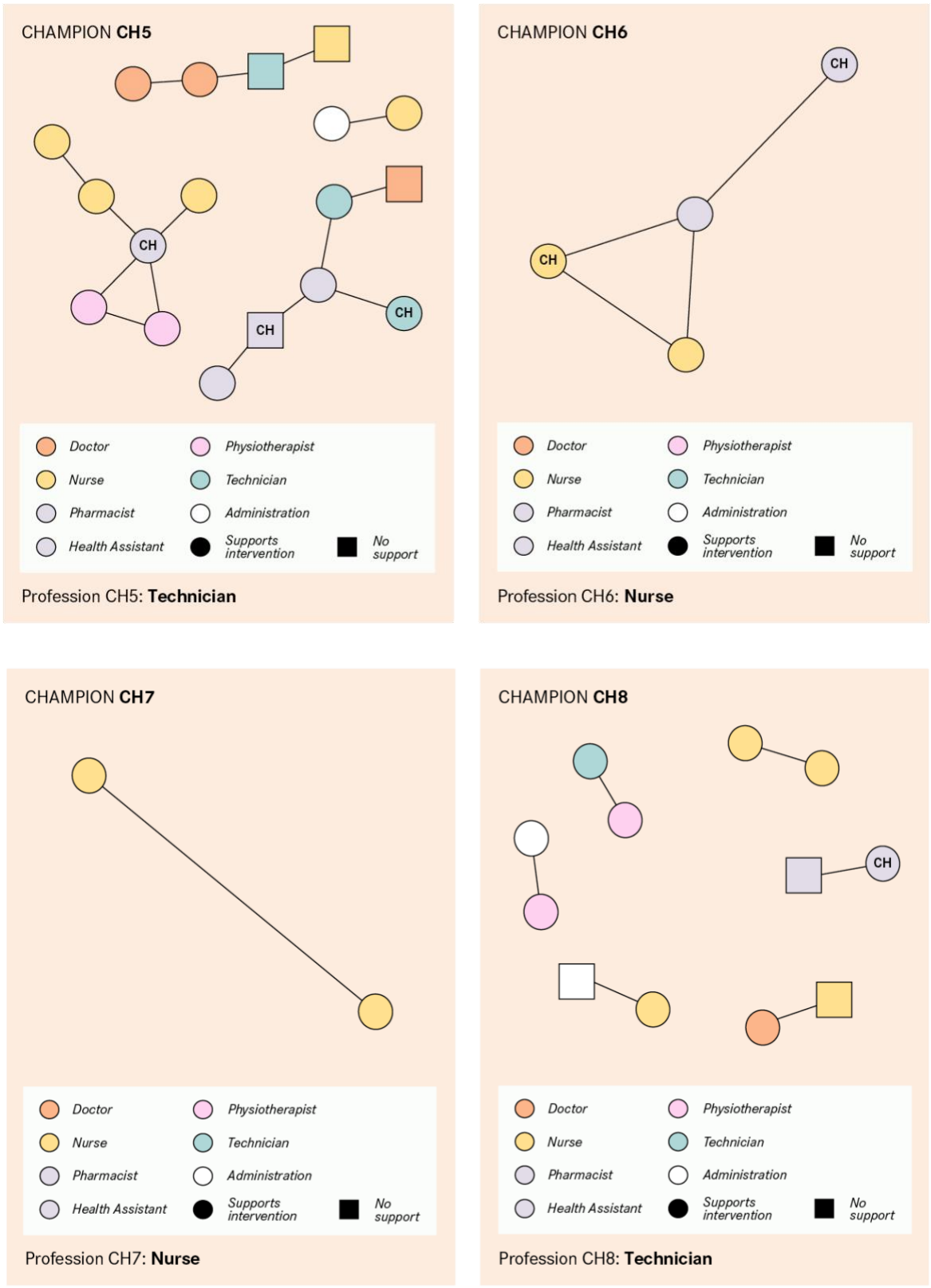
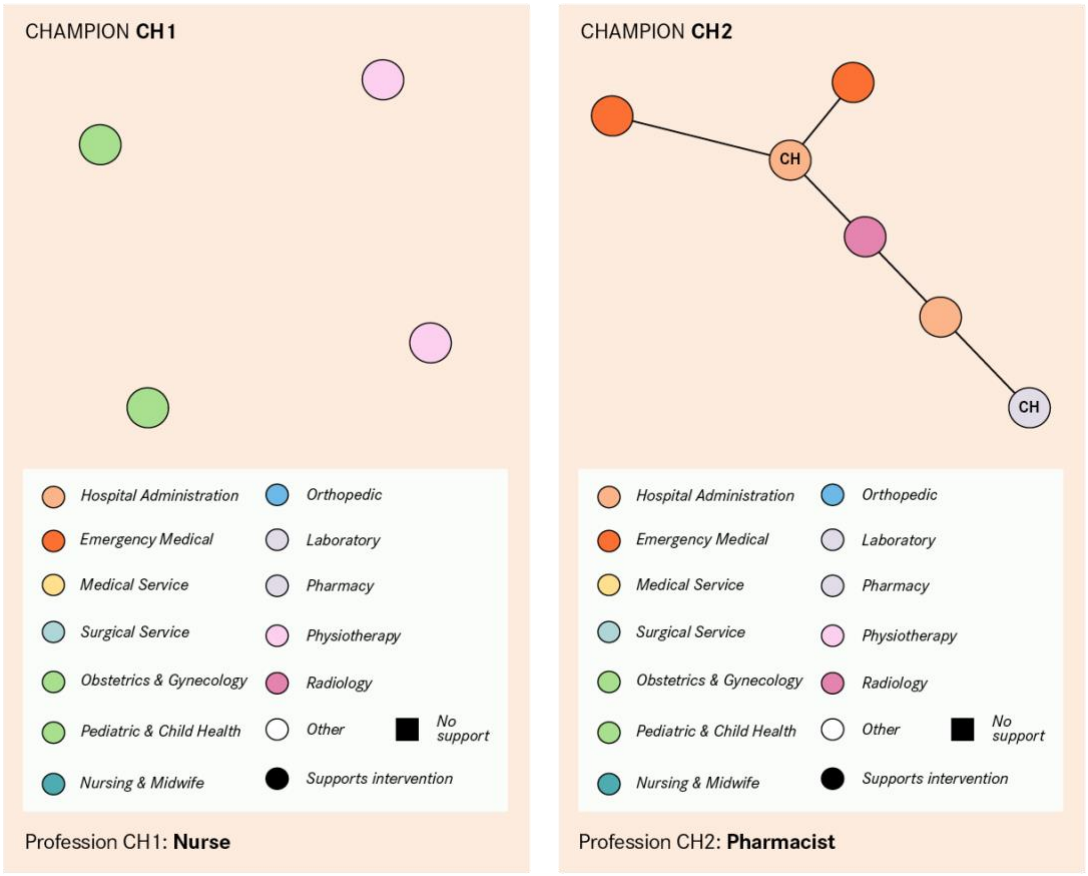


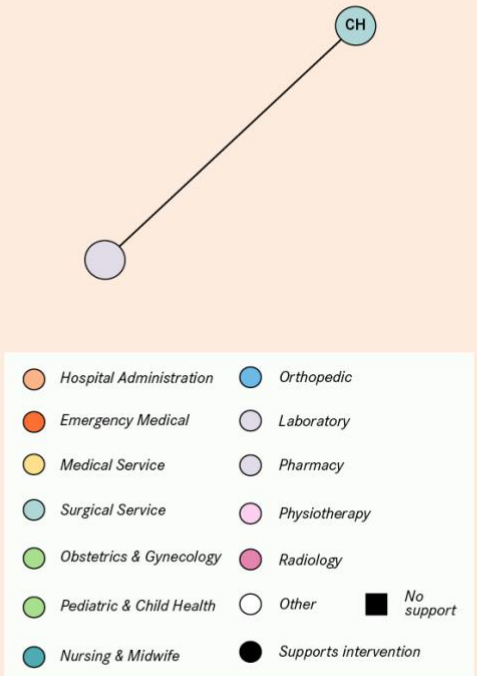
Figure 3: Visualizations of the champions' social networks of colleagues in other departments. The colors indicate the profession of the colleagues. The shapes indicate whether a colleague is supportive of the intervention (circle) or not (square). Lines indicate that two providers regularly talk to each other.

2.1.3 Dissemination to various departments

The previous analysis showed that champions mainly communicated with clusters of people who also talk to each other frequently. This can mean two things: (1) Champions may talk about the intervention with one group of colleagues who work in the same department. In this case, the dissemination would not reach any other parts of the hospital. (2) Champions may talk with a group of colleagues who all work in different departments (e.g., during a meeting of head nurses). In this case, the informed colleagues could disseminate the information further in their own departments. To explore these options, we plot in Figure 4 the same networks as above but now use colors to indicate the departments in which each network contact works.

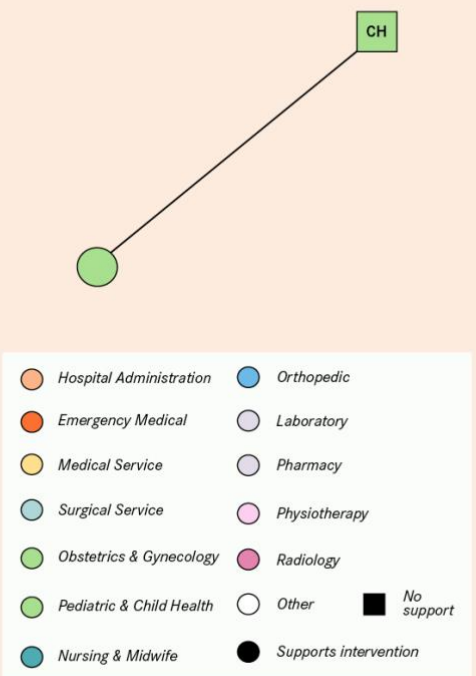


CHAMPION **CH3**



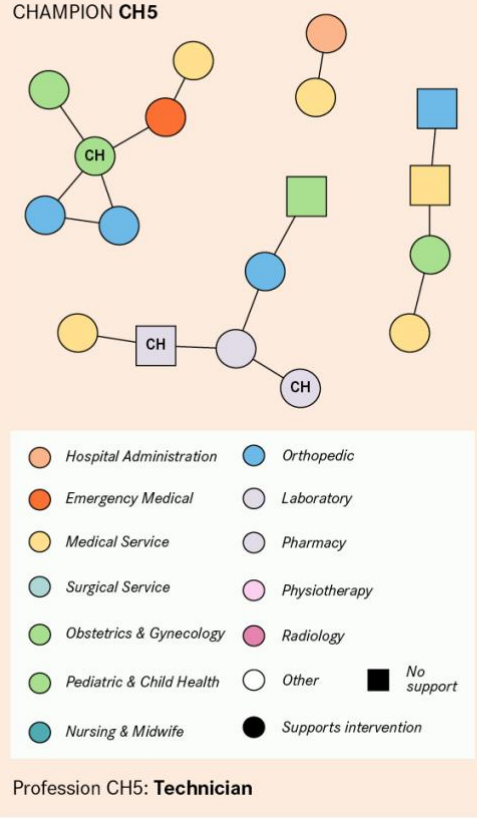
Profession CH3: **Doctor**

CHAMPION **CH4**



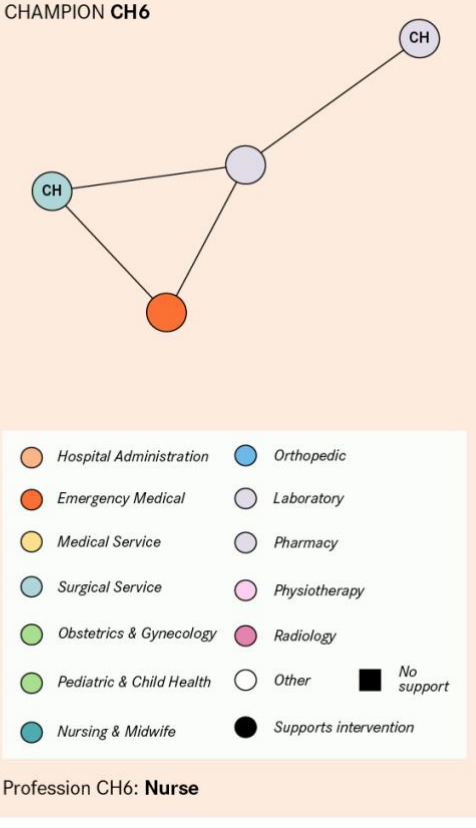
Profession CH4: **Doctor**

CHAMPION **CH5**



Profession CH5: **Technician**

CHAMPION **CH6**



Profession CH6: **Nurse**

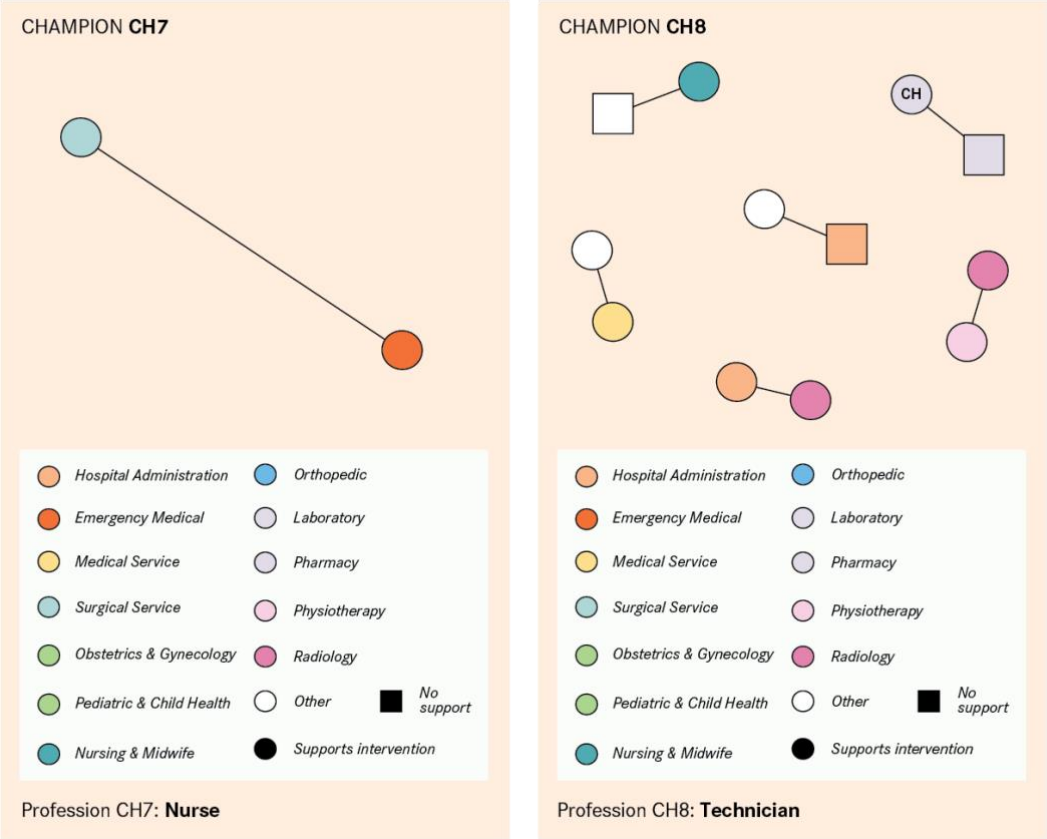


Figure 4: Visualizations of the champions' social networks of colleagues in other departments. The colors indicate the departments in which each colleague works. The shapes indicate whether a colleague is supportive of the intervention (circle) or not (square). Lines indicate that two providers regularly talk to each other.

The diverse colors in most of the champions' social networks highlight that dissemination mainly was directed at colleagues from different departments.

2.1.4 Conclusions – Champions

- **Group dissemination:** Many champions informed their colleagues about the intervention in a meeting (according to the qualitative interviews). Accordingly, champions talked only once about the intervention with about half of their colleagues in their own department.

- **Moreover, dissemination to colleagues from other departments was also clustered:** Most champions have directed the dissemination at one group of colleagues who also talk to each other. Often, this was during meetings with this group of colleagues as the qualitative interviews indicate. The analysis shows that most of these colleagues worked in different departments. This suggests that dissemination to one group has the potential for wide reach in the hospital – most participants in the meetings

in which the intervention was discussed worked in different departments. They could have spread the information further among the colleagues in their departments.

- **Horizontal ties:** Champions tend to mostly (but not exclusively) talk about the intervention to colleagues in the same profession. This is particularly true for dissemination to other departments (and less so for champions' own department). The latter is explained by the finding that champions disseminated the information during meetings. These meetings may often include people with the same position (e.g., head nurses from different departments).

- **Diversity of champion's networks:** The two champions who were technicians (e.g., from radiology) talked to colleagues with a more diverse set of professions than champions who were nurses or doctors. Moreover, these two champions directed their communication at several small unconnected clusters of colleagues whereas most other champions only reached one group of colleagues who also talk to each other. This suggests that their dissemination had a wide reach to different parts of the hospital.

- **Opportunity:** Champions were more likely to talk with colleagues about the intervention when they had more opportunities to do so. For both colleagues within the same department and also from other departments, champions were more likely to talk about the intervention the more frequently they talked to these colleagues anyways. This means that exchange about the intervention was in many instances of an opportunistic rather than deliberate nature. This is particularly true for dissemination to other departments, which often took not place in personal conversations but in staff meetings (see next point).

- **Relationship quality:** Within the champions' own department, a central factor for choosing with whom to have repeated conversations about the intervention was the relationship closeness. Champions were more likely to talk to colleagues about the intervention more frequently the closer their relationship was. Closer relationships could imply more opportunities to talk with each other or that personal conversations about gift giving require some level of trust. The latter explanation (trust) appears frequently in the qualitative interviews (e.g., CH 5). This suggests that gift-giving is a sensitive topic that requires some level of trust for champions to disseminate the information in personal conversations. Relationship quality did not matter for dissemination to colleagues from other departments. The reason is that champions typically did not choose to have one-on-one conversations about gift-giving with colleagues from other departments but instead discussed the intervention during a meeting with a larger group of colleagues.

- **Encourage support among champions:** Except for two champions, all others had conversations about the intervention with other champions. The qualitative interviews show that this support was highly valued by the champions.

2.2 Providers in intervention departments

The network survey was conducted among 6 providers who worked in the intervention departments but who were not champions. The interview followed the same structure as with the champions. The first part concerned questions about conversations in their own department, and the second part was about dissemination to colleagues from other departments in the hospital.

2.2.1 Providers in intervention departments – direct colleagues in the same department

Four of the six providers had more than one champion in their network (see Table 4). Three providers had even 3 or 4 champions among the colleagues they identified in their department.

Provider ID	N colleagues	Champions	
		Yes	No
PR1	7	3	4
PR2	9	1	8
PR3	13	1	12
PR4	14	2	12
PR5	18	4	14
PR6	11	4	7
Total	72	15	57

Table 4: How many champions are in the providers' networks in their department?

How often did the providers talk about the intervention?

Most providers (except for one) have talked to some of their colleagues about the intervention (see Table 5). However, these conversations tend to be incidental. Few providers had repeated conversations.

Surprisingly, one provider (PR 5) had four champions in the network but did not talk about the intervention with anyone.

Provider ID	N colleagues	Frequency of talking about intervention			
		Never	*Once or twice*	*Multiple times*	*Missing*
PR1	7	3	4	0	0
PR2	9	4	3	2	0
PR3	13	2	7	4	0
PR4	14	0	10	4	0
PR5	18	18	0	0	0
PR6	11	7	4	0	0
Total	72	34	24	14	0

Table 5: Frequency of talking about the intervention with colleagues from the intervention departments.

What enhanced the likelihood to talk about the intervention?

- In contrast to the champions, providers were not more likely to talk to colleagues about the intervention, when they talked with them more frequently ($r = .06$, n.s.).
- There was a tendency to talk more often about the intervention when providers had a closer relationship with their colleagues ($r = .32$, $p < .001$). In the qualitative interviews, some providers (e.g., PR 5) mention that they would only talk about gift-giving with friends because it requires trust.
- Surprisingly, providers were **NOT** more likely to talk with champions about the intervention than with non-champions ($p = .773$). Of the 15 champions in these data, 8 did not have a conversation about the intervention with the providers.

Did the providers perceive opposition?

- Of the 72 colleagues named by the providers, 56 are perceived to support the intervention. Two colleagues are considered to be neutral. For 14 colleagues, the providers did not know what they thought about the intervention.
- Despite not having talked to every colleague, providers have a fairly good sense of who is in favor of the intervention.
- There is a perception of overwhelming support for the intervention among providers. Nobody seems to perceive opposition to the intervention.

2.2.2 Providers in intervention departments – dissemination to other departments

Similar to the champion interviews, we also mapped the providers' network across the hospital to see if they disseminated information about the intervention.

Table 6 shows that the providers named relatively few colleagues in other departments to whom they talked regularly. However, four of the six providers talked to a majority of the contacts in other departments about the intervention. Two providers (PR 5 and PR 6) did not talk about the interventions.

Provider ID	N colleagues	Frequency of talking about intervention		
		Never	*Once or twice*	*Multiple times*
PR1	5	2	1	2
PR2	7	1	5	1
PR3	7	0	3	4
PR4	6	1	5	0
PR5	12	12	0	0
PR6	9	9	0	0
Total	46	25	14	7

Table 6: Frequency of talking about the intervention with colleagues in other departments.

Did the providers perceive opposition in other departments?

Table 7 shows that almost everybody the providers talked to supports the intervention. If they haven't talked about the intervention, the providers do not know their attitude. The exception is PR 5 who claims everybody supports the intervention (even though they did not talk about the intervention).

Provider ID	N colleagues	Attitude intervention			
		Support	*Neutral*	*Oppose*	*Don't know*
PR1	5	1	0	0	0
PR2	7	6	0	0	1
PR3	7	7	0	0	0
PR4	6	6	0	0	1
PR5	12	12	0	0	0
PR6	9	0	0	0	9
Total	46	36	0	0	10

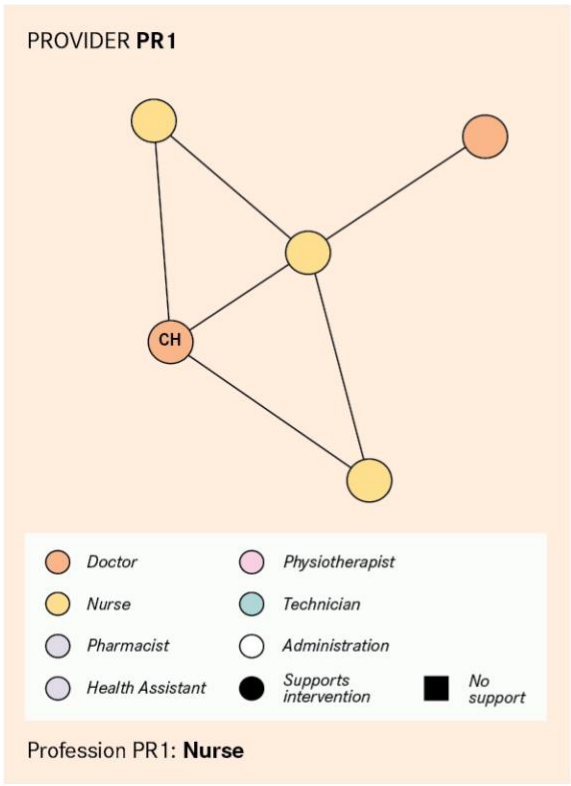
Table 7: Colleagues from other departments' attitudes toward the intervention.

What type of social capital do providers have in other departments to disseminate the intervention?

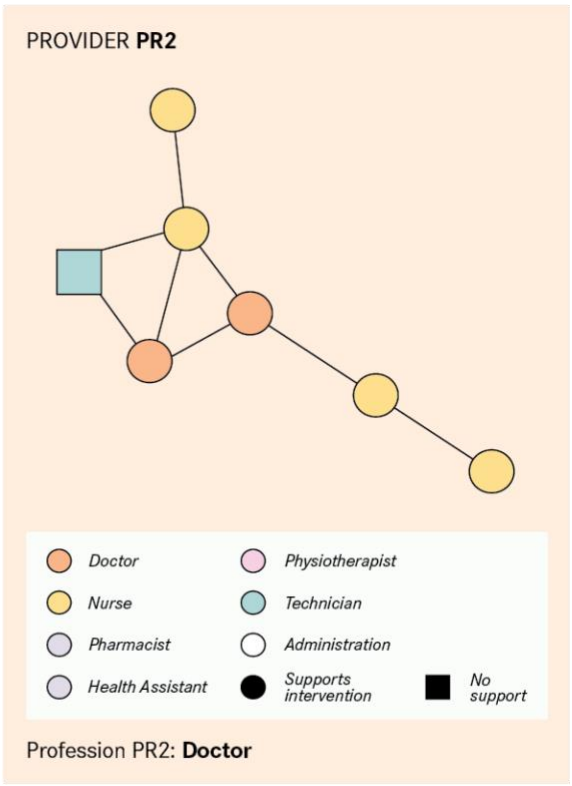
Figure 4 visualizes the social network of each provider across the hospital. The networks of PR 5 and PR 6 are being displayed although these providers did not talk about the intervention with colleagues in other departments.

Results (for PR 1 – PR 4) show:

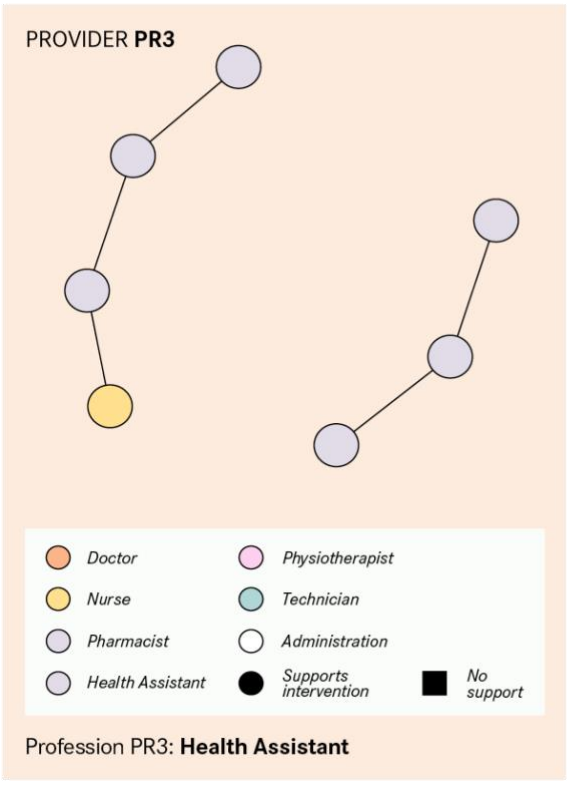
- Dissemination takes place mainly via horizontal ties: Just like the champions, providers mainly talk to colleagues from other departments with similar professions. Nurses talk mainly to other nurses; health attendants talk mainly to health attendants.
- Clustered dissemination: All providers talked to only one or two (PR 3) groups of colleagues who also talk to each other. This means that the information about the intervention mainly reached one other group of people.



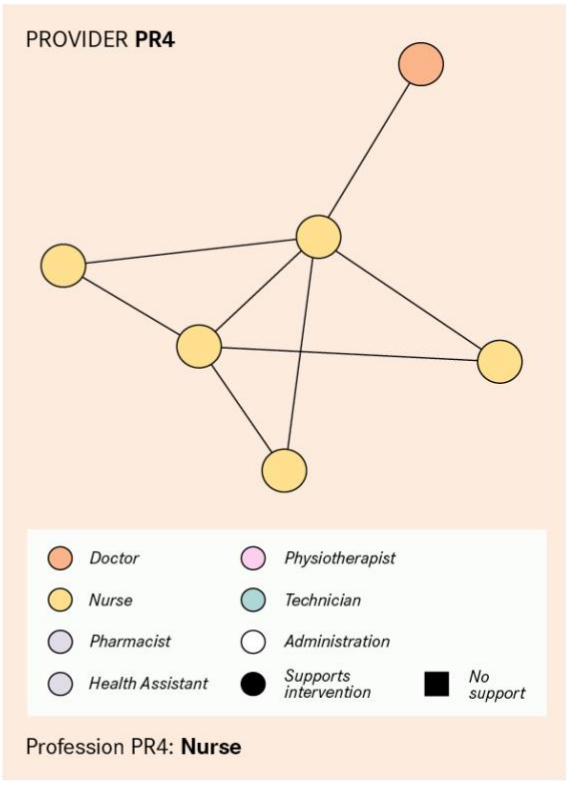
Profession PR1: **Nurse**



Profession PR2: **Doctor**



Profession PR3: **Health Assistant**



Profession PR4: **Nurse**

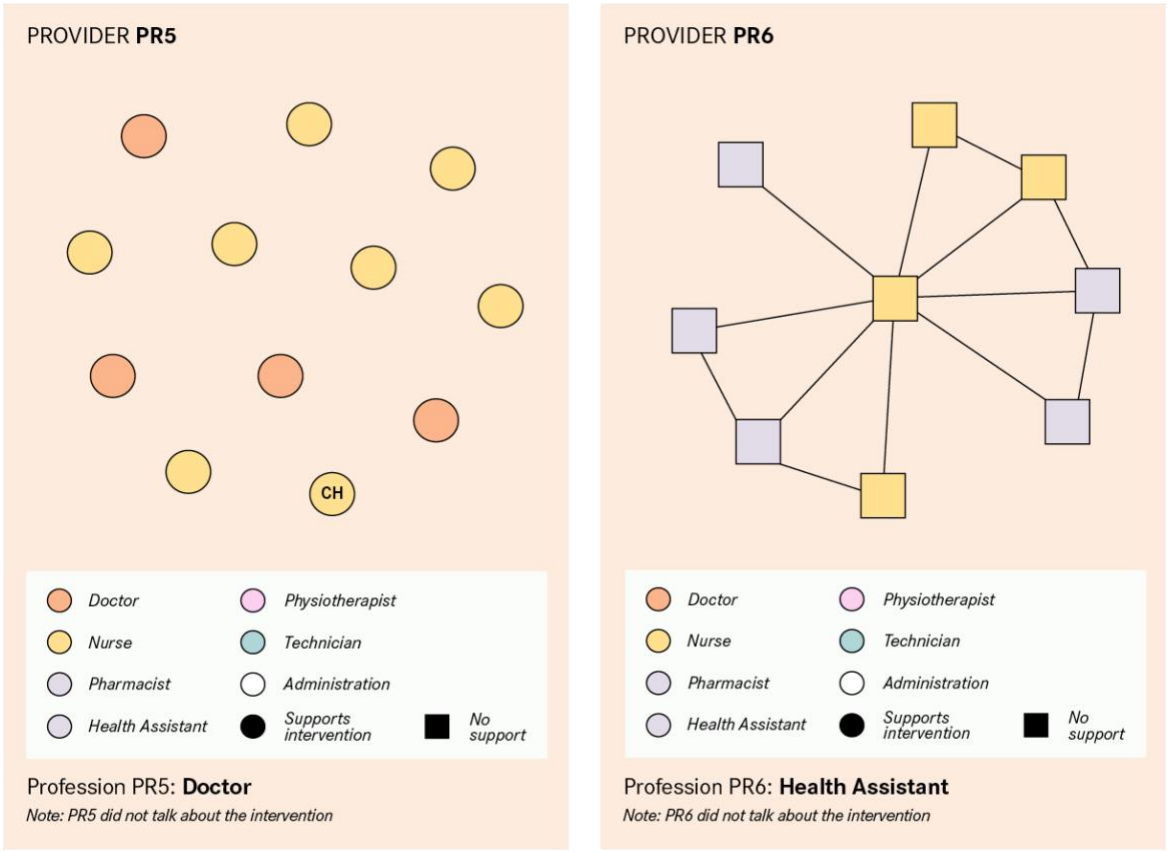


Figure 5: Visualizations of the social networks of providers who work in an intervention department with colleagues who work in other departments. The colors indicate the profession of the colleagues. The shapes indicate whether a colleague is supportive of the intervention (circle) or not (square). Lines indicate that two providers regularly talk to each other.

2.2.3 Conclusions – Non-champion providers

- **Group dissemination:** Providers were not more likely to have conversations about gift-giving with champions than with other colleagues. The qualitative interviews highlight that most providers learned about the intervention through meetings in which the champions told about the intervention. This often led to follow-up conversations about gift-giving with colleagues.

- **Trust:** Personal conversations about gift-giving require some level of trust. This is why providers had more frequent conversations the closer their relationship was (e.g., with friends). This hinders champions' ability to have personal conversations with all colleagues.

- **Openness to change:** One provider PR 5 did not have conversations about gift-giving despite having 4 champions among the colleagues. In the qualitative interview, PR 5 is

very reluctant to change their view of gift-giving. This may have prevented champions to engage in conversations with this provider.

- **Horizontal dissemination:** Providers' networks are mainly horizontal. Nurses talk to nurses, doctors to doctors. This means that champions should be encouraged to discuss the intervention with colleagues from different professions so that they can spread the information among others in the same profession.

- **Limited dissemination to other departments:** Non-champion providers mainly talk to only one or two groups of closely connected colleagues from other departments. From the qualitative interviews, it becomes clear that the conversations about the intervention often took place during staff meeting. This means the intervention was discussed in groups of people with similar professions (e.g., head nurses) from different departments.

2.3 Dissemination of the intervention to other parts of the hospital

The last part of this research was designed to understand whether the intervention that was targeted at two buildings in the hospital would reach the wider staff. To this end, in-depth interviews and the network survey were conducted among 6 providers who worked in buildings in which the intervention did not take place. No champions worked in these buildings and the posters were also not present there.

The interview with providers in non-intervention departments contained only the second part of the network survey. That is, providers in non-intervention departments were only asked about colleagues who work in other departments, not their own. This was to learn how information about the intervention might have traveled through the hospital to reach the provider.

2.3.1 Conversations about the intervention – dissemination to other departments

Table 8 shows that providers in non-intervention departments named more people than champions or providers in intervention departments. Most likely this was because the providers in non-intervention departments did not already complete questions about their direct colleagues and may have thus been more motivated.

Provider ID	N colleagues	Frequency of talking about intervention		
		Never	*Once or twice*	*Multiple times*
PR7	29	0	0	29
PR8	12	2	4	6
PR9	21	3	16	2
PR10	12	12	0	0
PR11*	(8)	-	-	-
PR12	14	14	0	0
Total	88	31	20	37

Table 8: Frequency of talking about the intervention with colleagues in other departments

** Provider 11 indicates to not have heard about the intervention. Accordingly, this person was not asked how often they spoke about the intervention.*

Not all of the interviewees have talked to colleagues about the intervention. Three of the six interviewed providers (PR 7, 8, 9) report having such conversations. One even had multiple conversations with a large number of colleagues. However, three other providers (PR 10, 11, 12) have not spoken about the intervention and one provider (PR 11) has not heard about the intervention at all.

The extreme distribution of responses makes further analysis about conversation frequency or relationship closeness meaningless. One provider (PR 7) indicates to have had multiple conversations with 29 people in the networks and to have frequent interactions and very close relationships with everybody. In contrast, two providers indicate not having talked to anyone and report medium levels of relationship closeness.

Was the dissemination to other departments successful?

Five of the six providers have heard about the intervention. From the qualitative interviews, it becomes clear that all but one provider (PR 11) have seen the posters about the intervention. All of the providers are positive about the posters and the aim of the intervention. Moreover, three providers (PR 7, 8, 9) have attended meetings in which someone (potentially a champion but that is not clear) discussed gift giving and why the hospital opposes it.

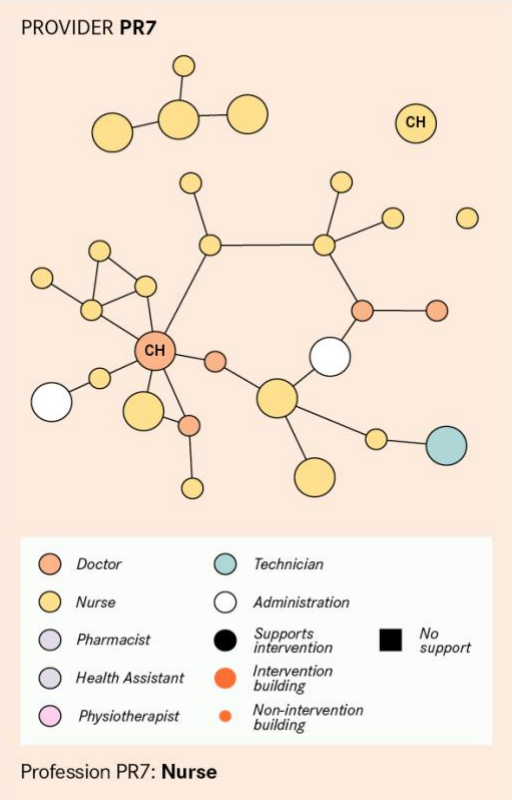
Did the providers perceive opposition to the intervention?

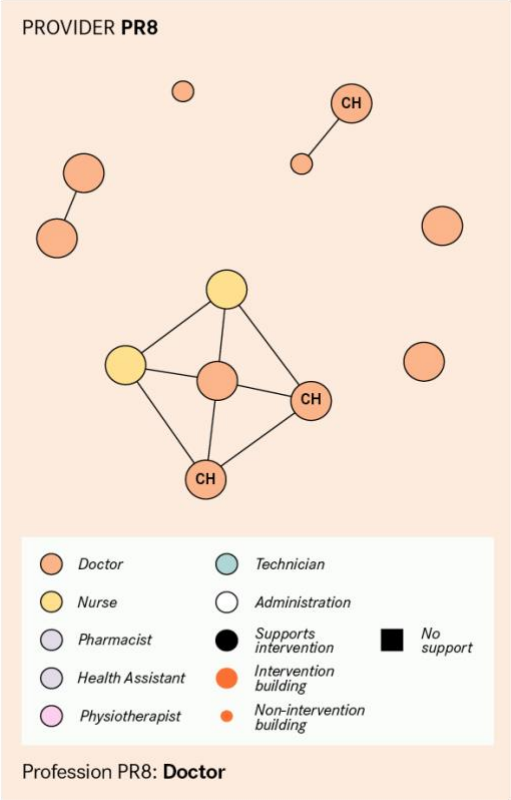
In addition, the network data show that the providers perceive a positive reception of the intervention in their wider social network. Of the 88 colleagues these providers name, they indicate

that the vast majority (71) are supportive of the intervention.[3] For 17 colleagues, they indicate not knowing their attitude toward the intervention.

The role of champions in the dissemination

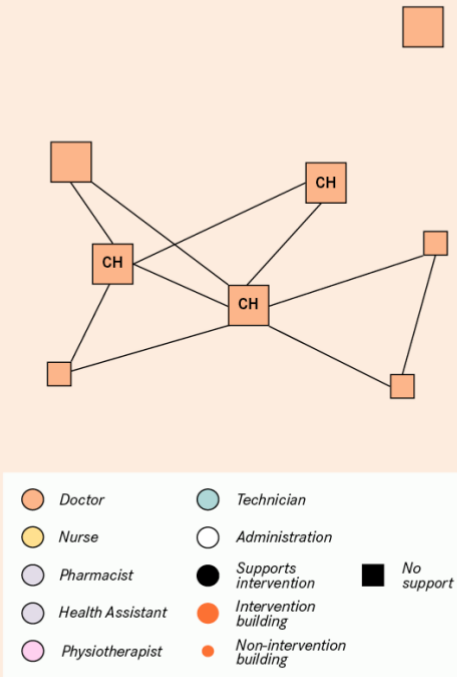
Figure 5 visualizes the social network of each provider in non-intervention departments across the hospital.





3 These numbers do not include the 8 colleagues of PR 11 who has not heard about the intervention.

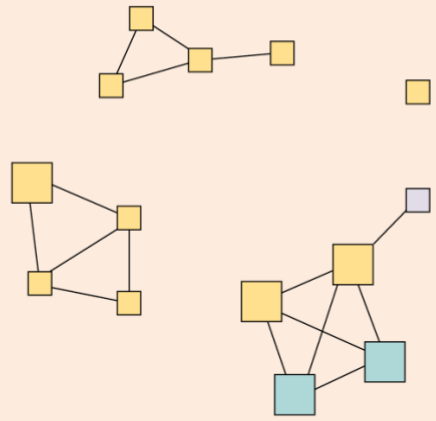
PROVIDER **PR11**



Profession PR11: **Doctor**

Note: has heard of the intervention

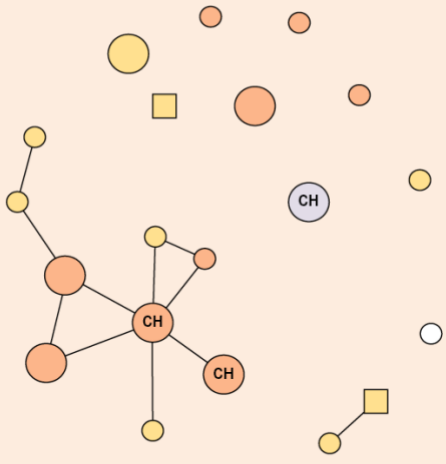
PROVIDER **PR12**



Profession PR12: **Health Assistant**

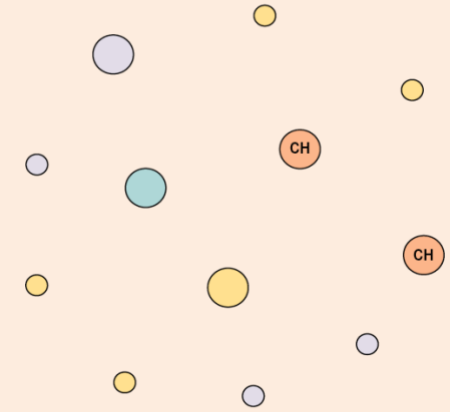
Note: has heard of the intervention

PROVIDER **PR9**



Profession PR9: **Health Assistant**

PROVIDER **PR10**



Profession PR10: **Nurse**

Note: has not talked about the intervention

Figure 6: Visualizations of the social networks of providers who work in non-intervention departments with colleagues who work in other departments. The colors indicate the profession of the colleagues. The shapes indicate whether a colleague is perceived to be supportive of the intervention (circle) or not (square). The size of the node indicates whether the provider works in an intervention department (large) or a non-intervention department (small). Lines indicate that two providers regularly talk to each other.

Results show:

- Horizontal ties: Four of the six providers tend to mainly talk to colleagues from other departments with similar professions. Nurses talk mainly to other nurses; doctors mainly talk to doctors. This means that mouth-to-mouth dissemination requires that champions are recruited from all relevant professions. In line with this, PR10 (a nurse) has not talked with anyone about the intervention despite having two champions in the network. However, these champions are doctors and not nurses.
- Champions in the network: All but one provider (PR 12) have two or more champions in the network. This suggests that champions can – in theory – also disseminate information about the intervention to other parts of the hospital.
- Reinforcing message: the first three providers who have talked with many colleagues about the intervention have multiple champions and multiple non-champion providers who work in intervention departments in their network (indicated by the size of the nodes). Many of them are also connected to each other (meaning they might be encountered in groups). Having multiple people in the network who are informed about the intervention and can involve third persons in their conversation about it can reinforce the message of the intervention.

Why did not all providers discuss the intervention with colleagues?

Two providers (PR 10 and PR 12) said that they have not talked about the intervention and provider PR 11 said not to have heard about the intervention despite having 3 champions in the network.

- Relevance of the intervention: The qualitative data show that PR 12 is a health attendant who provides no medical service to patients. PR 12 is therefore unlikely to receive gifts and to discuss gift-giving with colleagues
- Lack of a champion in the network: PR 12 has no champion in the network. This may be an additional factor why PR 12 has not talked about the intervention.
- Necessary but not sufficient condition: Surprisingly, PR 11 has three champions in the network, yet the provider has not heard of the intervention. Likewise, PR 10 has two champions in the network but has not talked with anyone about the intervention. Although these cases are outliers compared to the other participants in this study, the results imply that just having personal interactions with champions is not enough for the dissemination of the information.

- Tenure: PR 11 only works for a year at the hospital. Perhaps this was not sufficient time to build up trust relationships that may be necessary for a conversation about gift-giving.
- None of the three providers (PR 7, 8, 9) who have discussed the intervention with colleagues mentioned a personal conversation with champions. Instead, all three attended meetings or training in which gift-giving was discussed. This suggests that (1) such meetings are effective in spreading information about the intervention and (2) these meetings encourage repeated discussions of gift-giving among hospital staff in non-intervention departments.

2.3.2 Conclusions – Dissemination

- **Posters:** The posters were highly effective in informing most parts of the hospital even though the posters were only visible in the two intervention buildings. Five of six interviewed providers who worked in other parts of the hospital have seen the posters and four of these providers have discussed the posters with colleagues.

- **Group dissemination:** The three providers who have discussed the intervention with colleagues have all participated in meetings (e.g., on patient care) in which the intervention was also discussed. None mentioned a personal conversation with a champion. This suggests that champions can effectively disseminate the information to the wider hospital through workshops and meetings. This may be even more effective than one-on-one conversations because more people can be reached. The network survey further suggests that these workshops have led to follow-up conversations about gift-giving with colleagues.

- **Horizontal ties:** Dissemination to other parts of the hospital was most effective when providers had a champion in the network who had a similar occupation (e.g., nurses with a nurse champion). This suggests that it is important to recruit champions for the intervention from all relevant occupational groups in the hospital.

3 Appendix

3.1 Questionnaire (implemented in Network Canvas)

The questionnaire has two parts. Part 1 is about dissemination within the intervention department. Part 2 concerns dissemination across departments. Providers working in an intervention department (this includes the champions) should complete both parts of the questionnaire. Providers working in other departments should only complete part 2 of the questionnaire. Note that I have adjusted part 2 for providers in non-intervention departments after having seen the data from the champion interviews. The new questionnaire is here.

Welcome to the social network interview

Enter participant ID number

EgoGender: **What is your gender?**

- Female 0
- Male 1
- other 2

EgoYear: **In what year were you born?**

EgoProfession: **What is your profession?**

Doctor 1

Nurse 2

Midwife 3

Domestic staff 4

Administrative staff 5

Other 6

DeptNetwork: **Select all colleagues that you know from this list**

Part 1: Dissemination within the intervention department

Preload the names of all members of the department into the questionnaire (we need to get a list with names from the hospital and also the profession/ role (head of department/ nurse/doctor/other staff) or we have to ask this as well).

1. **DeptTalk: How often do you talk to these people? This includes all conversations - work related or private.** *(ordinal bin question: drag and drop names into answer categories – see figure)*

    - (Almost) never 1
    - Sometimes 2
    - Moderately often 3
    - Very often 4
    - Extremely often 5

2. **DeptClose: How would you describe your relationship with each person?** *(ordinal bin question: drag and drop names into answer categories)*

    - Not at all close 1
    - Slightly close 2
    - Moderately close 3
    - Very close 4
    - Extremely close 5

3. **DeptGift: How often have you talked to these people about gift giving during the past FOUR weeks?** *(categorical bin question: drag and drop names into answer categories)*

    - Never 1
    - Once or twice 2
    - Multiple times 3

    3a. **DeptIntTalk*: [Only non-champion providers in intervention departments]*** **How often have you talked to these people about the intervention to reduce gift giving in this hospital?** *(categorical bin question: drag and drop names into answer categories)*

        - Never 1
        - Once or twice 2
        - Multiple times 3

4. **DeptInterv: As far as you know, do these people support or oppose having an intervention to reduce gift giving in this hospital?** *(categorical bin question: drag and drop names into answer categories)*

- Support having an intervention 1
- Neither support nor oppose an intervention 2
- Oppose having an intervention 3
- I do not know 4

Part 2: Dissemination to another department

1. Other departments: **Now we would like to ask a few questions about colleagues from other departments.**

2.
   a. **ONLY CHAMPIONS Outside: Who are colleagues from other departments with whom you talk regularly? This includes private conversations and work-related conversations. Type in your colleague's name, nickname, or initial.** *(text box that creates circles with the names of colleagues)*

   b. **NON-CHAMPION PROVIDERS Outside: Who are colleagues from other departments with whom you talk regularly? This includes private conversations and work-related conversations.** *(Long list with all hospital employees is shown)*

3. [Follow-up question to make sure that nobody was forgotten when answering the previous question] **Think about all the different departments and wards in the hospital. Think also about non-clinical domestic staff. Do you talk to others regularly?**

4. OutsideLocation: **Place these individuals on the screen. Place them closer to each other if they talk to each other more frequently (as far as you know).** *(start creating the layout of the network – see figure)*

5. OutsideTalk: **Please draw lines between the individuals who, as far as you know, talk to each other at least once during a normal week.** *(finish the layout of the network)*

6. OutsideDept: **In which department or ward do these people work?** *(categorical bin question: drag and drop names into answer categories)*

   - Hospital administration 1
   - Emergency Medical Department 2
   - Medical Service Department 3
   - Surgical Service Department 4
   - Obstetrics & Gynecology Department 5
   - Pediatric & Child Health Department 6
   - Nursing & Midwife Department 7
   - Other 8 → *[Follow-up]*
     Type in the name of the department in which this person works [OutsideDeptOther].

7. OutsideFreq: **How often do you talk to these people?**
(ordinal bin question: drag and drop names into answer categories)

- Sometimes 2
- Moderately often 3
- Very often 4
- Extremely often 5

8. OutsideClose: **How would you describe your relationship with each person?**
(ordinal bin question: drag and drop names into answer categories)

- Not at all close 1
- Slightly close 2
- Moderately close 3
- Very close 4
- Extremely close 5

9. *[Only providers not working in an intervention department]*
EgoIntervention: **Have you heard about a recent intervention to reduce gift giving in this hospital?**

- Yes
- No

10. *OutsideGift: [Only those who said "yes" to the previous question and all providers working at an intervention department]* **How often have you talked to these people about the intervention to reduce gift giving in this hospital?**
(categorical bin question: drag and drop names into answer categories)

- Never 1
- Once or twice 2
- Multiple times 3

11. *OutsideInterv: [Only those who said yes question 9 and all providers working at an intervention department]* **As far as you know, do these people support or oppose having an intervention to reduce gift giving in this hospital?**
(categorical bin question: drag and drop names into answer categories)

- Support having an intervention 1
- Neither support nor oppose an intervention 2
- Oppose having an intervention 3
- I do not know 4

3.2 Methodological notes for future studies

1. Display names: We have seen that the network with providers in other departments (buildings) is smaller in the champion network than in the networks of the non-champion providers. One reason is that champions did not see the names of all hospital employees but instead had to type in the first letters of a name. All names starting with these letters would then be displayed. The enumerators said that this was difficult for some champions because they could not recall names. To avoid this, it is better to display all names and allow respondents to freely select from them.

2. Name generators: Providers in non-intervention departments named more colleagues in other departments than providers in intervention departments. This could be because providers in intervention departments first answered questions about colleagues that worked in their own department. This means these providers learned that the more colleagues they named, the longer the questionnaire became. Perhaps this discouraged them from naming many colleagues in the second part of the survey. To avoid this, it is better to first ask to identify colleagues inside and outside of their department and only then ask questions about these people (i.e., all name generators before name interpreter questions).

3. Train enumerators in using the responses in the network survey for follow-up qualitative questions. For instance, provider PR2 said in the network survey to have discussed the intervention with 5 colleagues in the department but in the qualitative interview, PR 2 said to not have had conversations. An enumerator could go into these discrepancies, for instance by asking who the 5 colleagues were and what they discussed when they talked about the intervention.