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Evaluation of Vaccination Policies Among  
Utah Pediatric Clinic Employees

Tia Peterson

A thesis submitted to the faculty of  
Brigham Young University  
in partial fulfillment of the requirements for the degree of  
Master of Science

Karlen E. (Beth) Luthy, Chair  
Renea L. Beckstrand  
Janelle Macintosh  
Lacey M. Eden

College of Nursing  
Brigham Young University  
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## ABSTRACT

### Evaluation of Vaccination Policies Among Utah Pediatric Clinic Employees

Tia Peterson  
College of Nursing, BYU  
Master of Science

*Introduction:* Pediatric health care settings are high-risk environments for spreading communicable and vaccine-preventable diseases from health care workers to susceptible patients.

*Methods:* All managers of pediatric clinics operating in the state of Utah were included. Participants were invited to complete a two-page questionnaire regarding their clinic vaccination policies.

*Results:* Half ( $n = 23$ , 50%) of Utah pediatric outpatient clinics recommend employee vaccinations, although employee refusal is allowed without consequence. Of all adult vaccines, influenza was most often included as part of the employee vaccination policy. Some clinics required unvaccinated employees to wear masks in the event of illness, but many had no additional requirements for unvaccinated and ill employees.

*Discussion:* Vaccination of health care workers is an effective approach to reduce disease transmission. Mandatory vaccination policies can significantly improve vaccination rates among health care workers.

Keywords: immunization, vaccination, health care workers, pediatrics

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## Table of Contents

|                                  |     |
|----------------------------------|-----|
| Title .....                      | i   |
| Abstract .....                   | ii  |
| Acknowledgements .....           | iii |
| Research Questions .....         | 3   |
| Methodology .....                | 3   |
| Participants .....               | 3   |
| Setting .....                    | 4   |
| Design .....                     | 4   |
| Instrument .....                 | 4   |
| Data Analysis .....              | 6   |
| Results .....                    | 6   |
| Vaccine Policy Description ..... | 6   |
| Discussion .....                 | 9   |
| Conclusion .....                 | 12  |
| References .....                 | 13  |

## List of Tables

|               |    |
|---------------|----|
| Table 1 ..... | 18 |
| Table 2 ..... | 19 |
| Table 3 ..... | 20 |
| Table 4 ..... | 21 |
| Table 5 ..... | 22 |

|               |    |
|---------------|----|
| Table 6 ..... | 23 |
| Table 7 ..... | 24 |

## Evaluation of Vaccination Policies Among Utah Pediatric Clinic Employees

Vaccinations are one of the greatest health achievements of the 20<sup>th</sup> century, reducing incidence of disease and, consequently, improving the overall health of individuals and communities (Attaran, 2008; Luthy, Beckstrand, & Meyers, 2012; Luthy, Thorpe, Dymock, & Connely, 2011). Despite advances in controlling the spread of diseases, there are still settings, such as health care environments, where communicable and vaccine-preventable diseases may spread (Aitken & Jeffries, 2001; Goldstein, Kincade, Gamble, & Bearman, 2004). Certain communicable diseases, such as influenza and pertussis, are highly contagious and can be easily transmitted from the health care worker (HCW) to at-risk patients (Shefer et al., 2011). Fortunately the risk for transmitting these communicable diseases to patients can be reduced with HCW vaccination (United States Department of Health and Human Services, 2012). In order to reduce transmission of vaccine-preventable diseases, the Centers for Disease Control and Prevention (Centers for Disease Control and Prevention [CDC], 2011a) recommend HCWs stay up-to-date on vaccinations, including influenza and pertussis.

Influenza kills an average of 36,000 persons (CDC, 2011b) and hospitalizes over 200,000 persons annually in the United States (U.S.) (CDC, 2011c). To prevent the spread of influenza many organizations, such as the Association of Professionals in Infection Control (APIC), National Foundation for Infectious Diseases (NFID), Advisory Committee on Immunization Practices (ACIP), and Joint Commission Accreditation of Healthcare Organizations (JCAHO) have recommended monitoring HCW vaccination rates for influenza. Despite these recommendations, influenza vaccination rates among HCWs remain suboptimal (Fiore et al., 2010; Kung, 2013). In fact, during 2011-2012 the influenza vaccination rates among HCWs was only 66.9% (Ball et al., 2012).

Since 2006, the CDC recommends the cocoon vaccination strategy which is a program to protect newborns that are too young to receive a pertussis vaccination by vaccinating the caregivers of the infant (Texas Children's Hospital, 2010). In addition to caregivers, HCWs are also at risk for infecting infants with pertussis (Wicker & Rose, 2010). To prevent the spread of pertussis from HCW to infant, the ACIP recommends the vaccination of all HCWs with Tetanus, Diphtheria, and Pertussis (Tdap) (CDC, 2011a).

Since the announcement of JCAHO's requirement for HCWs vaccinations, many hospitals have developed vaccination tracking and administration programs. In addition, the CDC (2011a) recommends that HCWs in outpatient care settings or clinics be vaccinated against a number of diseases, including influenza. In Utah, 58.3% of hospitals have instituted mandatory influenza vaccination for HCWs (Utah Department of Health, 2012). Several large hospital systems, such as Intermountain Healthcare and University of Utah also require Tdap vaccination for all employees (Intermountain Healthcare, 2013; University of Utah, 2011).

While Utah HCW vaccination compliance for influenza and pertussis remains high in the inpatient setting, vaccination compliance of Utah HCWs employed in outpatient clinic settings is largely unknown. When considering the susceptibility of infants to influenza and pertussis, identifying vaccination policies for HCWs in the pediatric outpatient setting is a priority. The purpose of this study was to determine the presence of vaccination policies for HCWs in outpatient pediatric clinics in Utah and, if present, identify the common components of these vaccination policies.

## Research Questions

- 1) How do Utah pediatric outpatient clinics describe their employee vaccination policies?
- 2) What are the guidelines for employee vaccine exemptions in Utah pediatric outpatient clinics?

## Methodology

### Participants

Institutional Review Board approval was obtained for this study prior to data collection. A convenience sample of 73 Utah pediatric outpatient clinic managers was obtained. The list of eligible pediatric clinics was generated by comparing data collected from a general Internet search, a list of pediatric clinics registered through the state as a *Vaccine for Children* participant, pediatric clinics located within the jurisdiction of county health departments, and a list of pediatric clinics from several pharmaceutical companies. These lists were then compiled into one general list of pediatric clinics within Utah.

To be eligible for participation, participants needed to be employed as the primary clinic manager of at least one pediatric outpatient clinic in Utah. Clinic managers overseeing multiple pediatric clinics as part of the same business were also included in the study. Clinic managers of pediatric specialty practices (such as pediatric neurology clinics), joint practices (such as joint pediatric/family practice clinics), and managers of pediatric inpatient or same day surgery clinics were excluded.

## Setting

Utah has the youngest per capita population in the U.S. According to estimates, almost one-third of Utah's residents are under age 18 and one out of every 10 is under the age of 5 years (Davidson, 2008).

## Design

On the initial encounter, pediatric clinic managers were contacted via telephone to explain the study. One month following the initial contact, managers received a packet in the mail. Each packet included an informed consent document, a questionnaire, a self-addressed and postage-paid return envelope, and a \$1.00 compensation for participation. One month following the distribution of the questionnaires, non-responders were sent a reminder packet that included another copy of the informed consent document, questionnaire, and self-addressed and postage-paid return envelope. The \$1.00 incentive was not included in the follow-up mailing. Return of the questionnaire implied the subject's consent. Clinic managers retained the \$1.00 incentive regardless of participation in the study.

## Instrument

The questionnaire was developed to identify existence of vaccination policies for Utah HCWs in outpatient pediatric settings, and if present, to identify the components of the vaccination policy. Questionnaire items were selected based on current literature regarding U.S. HCW vaccination mandates and were reviewed by a panel of public health experts prior to pre-test. Public health experts included members of state and local governmental agencies; representatives of local, privately-owned pediatric offices; health care providers from government subsidized clinics; and vaccination experts. The questionnaire was pre-tested in family practice and urgent care clinics within the state of Utah by 12 clinic managers and then

edited according to provided suggestions. The finalized, two-page questionnaire was then distributed to 73 pediatric clinic managers and included seven demographic, ten multiple choice, three open-ended, and two yes/no items.

Demographic items included gender and age, the number of years the manager worked at the facility, location of the clinic (i.e. urban, suburban, or rural), and a description of the clientele (i.e. insured, uninsured, or self-pay). Subjects were asked to report the percentage of employees that worked directly with children during a routine day.

Multiple choice items covered description of office vaccination policy and associated record keeping, to whom the vaccination policy applied, consequences for being non-compliant with vaccination policy (if present), and the perceived convenience of obtaining vaccinations. Some items required participants to select one answer, while others instructed participants to select all that applied.

The questionnaire included three open-ended items. Participants were asked to report the year of policy implementation and to estimate the percentage of employees who were up-to-date on their Tdap vaccination. The last question allowed participants the opportunity to share any additional comments.

Yes/no items were intended to evaluate if students completing clinical hours at the facility were included in the current vaccination policy and if pediatric clinics offered vaccines (namely Tdap) to parents or other household contacts of infants. Participants were able to select the answer “don’t know” if uncertain of the answer.

Data gathered from questions relating to vaccination policy description, as well as the clinic’s exemption policy are included in this report. One multiple choice question asking about the convenience of employee vaccinations, two open-ended items relating to the percentage of

clinic employees who were up-to-date on their Tdap vaccination, a question inviting the participant to share any additional comments, and both yes/no items are reported elsewhere.

### Data Analysis

Upon return of questionnaires, data were entered into SPSS 21 (SPSS Inc., Chicago, IL.). Frequencies, measures of central tendency and dispersion were calculated for quantitative items. Two independent researchers conducted a content analysis for open-ended items from the “other” and “comment” sections.

### Results

Of the 73 questionnaires distributed to pediatric outpatient clinics, 47 were returned for a response rate of 64%. The demographic data for managers included age, average number of years worked in that facility, and gender. The mean age was 46.56 years (SD = 12.026). The average number of years worked was 11.84 years (SD = 7.003). Of the clinic managers who responded, 37 (82.2%) were female and 8 (17.8%) were male.

Data were also collected on the outpatient pediatric clinics. Of the responding clinics, 20 (45.5%) were suburban, 15 (34.1%) were urban, and 9 (20.5%) were rural. Managers reported that 44 (93.6%) of the patients served at these facilities had health insurance. The remaining demographic data are reported in Table 1.

### Vaccine Policy Description

Current vaccination policies. Participants were asked to describe their clinic’s vaccination policy. Twenty three (50%) of the outpatient pediatric managers described their vaccination policy as recommending employee vaccination, although employee refusal was allowed without consequence. The second most frequently selected response was that the clinic had a vaccination policy, although employee refusal of vaccines resulted in a consequence other

than termination ( $n = 9$ , 19.6%). Only 7 (15.2%) managers stated the clinic had a vaccination policy wherein non-compliant employees were terminated or resigned.

Participants were instructed to check all applicable answers when questioned regarding to whom the employee vaccination policy applied. The back office staff, defined as including clinicians, medical assistants, and nurses, was the item most frequently selected ( $n = 39$ , 83%). Employees whose main responsibilities included work in the front office, specifically defined as receptionists and schedulers, were subject to a vaccine policy 78.7% ( $n = 37$ ) of the time. Billing staff members who worked on-site were included in the vaccination policy for 30 (63.8%) clinics (See Table 2).

Clinic managers were also asked to specify which vaccines were included in the clinic's vaccination policy. Of those who responded, influenza was selected most frequently ( $n = 31$ , 66%). Hepatitis B was second ( $n = 30$ , 63.8%), and Tdap ( $n = 28$ , 59.6%) was third. Varicella, the vaccination for chickenpox, was selected the least frequently ( $n = 16$ , 34.0%) (See Table 3).

Finally, clinic managers were asked how long their current employee vaccination policy had been in effect. Of those who responded, vaccination policy implementation ranged from 1 year to 15 years, with an average of 7.23 years (SD 5.0). The majority of participants ( $n = 25$ , 65.8%), however, stated they were unaware of the employee vaccination policy's effective date.

Vaccination exemption guidelines. Participants were asked to select which response most accurately described requirements for employee vaccine refusal or exemption. Religious beliefs were reported as the most commonly acceptable reason for vaccine refusal or exemption ( $n = 27$ , 57.4%). Other acceptable reasons for employee vaccine refusal included exemptions for medical reasons requiring a written excuse from the employee's health care provider ( $n = 23$ , 48.9%), and exemptions for personal beliefs ( $n = 23$ , 48.9%) (See Table 4).

When questioned about the acceptable reporting methods for refusing vaccinations, almost half of the clinics ( $n = 23$ , 48.9%) required documentation of the employee's vaccine exemption on a standardized paper form. Verbal confirmation in person ( $n = 12$ , 25%) was the second most acceptable method for reporting employee vaccination exemptions. Only 4 (8.5%) clinics reported that employee vaccination exemptions were not formerly documented (See Table 5).

As a follow up, participants were asked to specify what kind of information was included on their vaccine refusal, or exemption, form. Employee signature (either by hand or electronic) ( $n = 22$ , 46.8%) was most often included on the employee vaccination exemption form. Some facilities ( $n = 17$ , 36.2%) included a section where employees could explain their reason(s) for vaccine refusal. Other sections on the employee vaccination exemption forms included risk(s) of non-vaccination to patients ( $n = 14$ , 29.8%), as well as personal risk of vaccine refusal ( $n = 14$ , 29.8%) (See Table 6).

Participants then described required actions by ill employees who had previously refused recommended or mandated vaccinations. Of the responding clinics, 17 (36.2%) required their employees to wear a mask while at work if they had a cough, rash, or fever. Of those requiring unvaccinated employees to wear a mask during illness, 14 (29.8%) required a mask for cough, 10 (21.3%) required a mask for fever, and 8 (17%) clinics required a mask for rash. Only 13 (27.7%) participants reported having no additional requirements for unvaccinated employees who were ill.

When unvaccinated employees developed a cough, rash, or fever, 13 (27.7%) participants restricted these employees from performing their normal patient care duties. Only 4 (8.5%)

participants temporarily suspended or put the unvaccinated employee on unpaid leave until they had fully recovered from the cough, rash, or fever (See Table 7).

### Discussion

HCWs should be fully vaccinated since they have an ethical obligation to protect the health and safety, not only of themselves, but of their patients (Ottenberg et al., 2011). HCW vaccinations are, in fact, an important and effective strategy for reducing the transmission of communicable diseases (Theodoridou, 2014). However, relying on HCWs to voluntarily receive vaccinations has produced consistent, yet dismal results, for decades (Maltezou & Tsakris, 2011). In contrast, mandatory vaccination policies requiring HCW compliance with specific penalties, such as termination, dramatically improved vaccination rates among HCWs. For example, institutions that required employees to receive H1N1 vaccinations during 2009 experienced an almost eightfold higher coverage rate compared to vaccination rates of institutions that did not require or recommend seasonal vaccinations (CDC, 2010). Another clinic, Virginia Mason Medical Center in Seattle, Washington reported 98% vaccination compliance after implementing a mandatory influenza vaccination program for their HCWs (Babcock, Geneinhart, Jones, Dunagan, & Woeltje, 2010). Thus, instituting a mandatory vaccination policy among pediatric outpatient HCWs would likely have similar results and, consequently, should be carefully considered as an effective strategy for preventing the spread of communicable diseases in the clinic setting, with a few exceptions for medical or religious reasons.

Influenza and Tdap vaccines are highly recommended for HCWs (CDC, 2013a). However, these vaccines are especially important in HCWs who care for infants and children since these age groups are at great risk for developing severe disease and, in some cases,

suffering death (Bresee et al., 2013; CDC, 2014a). While infants can be protected against influenza with a vaccination, they are not eligible to receive the vaccine until they are 6 months old (CDC, 2013b). When coupled with recommendations that infants have five well-child visits before the age of 6 months (American Academy of Pediatrics, 2014), the importance of vaccinating pediatric HCWs who have contact with these vulnerable infants is readily apparent. Infants are highly susceptible to pertussis, a contagious respiratory illness, although they do not receive their first pertussis vaccination until 2 months of age. Further, infants are not fully vaccinated against pertussis until the administration of the fifth pertussis vaccination, usually administered at 4 years of age (CDC, 2014b). Because the pertussis illness rate is the highest it has been since 1955 (CDC, 2014c), it is important for HCWs to be adequately vaccinated against this potentially deadly disease.

To date, studies evaluating the transmission of communicable diseases from unvaccinated HCW to patient have focused on influenza. Over 400 health care institutions nationwide have instituted mandatory influenza vaccination of HCWs (Immunization Action Coalition, 2014), although some of these institutions allow the HCW to refuse the vaccine with penalty of wearing a mask while working as the only consequence. When HCWs wear masks, intuitively the masks prevent the spread of infectious diseases transmitted by respiratory droplets; however, no studies have conclusively proven that mask use by unvaccinated and infectious HCWs has prevented transmission of influenza to patients (CDC, 2009). Without a doubt, vaccination is the best strategy for preventing the spread of influenza from HCW to patient and is clearly recommended by the Centers for Disease Control and Prevention (2013c).

## Limitations

The participants of this study were selected using a convenience sampling. Furthermore, the sample were located in a single state – Utah. Consequently, the sample may not accurately represent the vaccination policies of pediatric clinics nationwide and may not be generalizable. While we queried all pediatric outpatient clinic managers in Utah, the sample size was small.

## Recommendations for Future Research

It may be helpful to replicate the study in other clinic settings, such as family practice or internal medicine, to compare HCW vaccination rates. Replication may reveal unique differences among general and specialty practices. In addition, questioning clinic managers regarding barriers to implementation and enforcement of HCW vaccination policies could provide valuable information and possibly lead to program development and future interventions.

## Implications for Pediatric Nurse Practitioners

According to the National Association of Pediatric Nurse Practitioners' (NAPNAP) *2010 Position Statement on Immunizations*, pediatric nurse practitioners (PNPs) should “be fully immunized according to the CDC guidelines for health professionals and for their age and risk groups” (para. 12). However, NAPNAP (2013) also encourages PNPs to “take the lead and participate in [quality improvement] efforts” (para. 1) that promote safe and quality care of children. As influential leaders in health care, PNPs should promote vaccination compliance, not only for themselves, but also among other nurse practitioners and HCWs in their places of practice. Currently, vaccination for communicable diseases, such as influenza, is highest among pharmacists (89.9%) and physicians (84.3%). The influenza vaccination rate among nurse practitioners is lower at 77.8%. The lowest influenza vaccination rates are among medical assistants or aides, 49.2% (CDC, 2013d). Nevertheless, PNPs can be instrumental in promoting

HCW vaccination policies in the pediatric outpatient clinic setting by working with the clinic manager, thus protecting the overall health of the children in their communities.

### Conclusion

Unvaccinated health care workers are at risk for spreading vaccine-preventable communicable diseases to other clinic employees and patients. Unfortunately, simply recommending vaccinations is rarely effective, even among HCWs. Suboptimal vaccination rates among HCWs are worrisome with any population, although it is especially problematic with pediatric patients because infants and young children are not fully vaccinated against all vaccine-preventable communicable diseases until later in life. As trusted providers of quality health care, PNPs should be fully vaccinated, as well as being proponents for mandatory vaccination within their own clinics and communities.

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Table 1  
*Demographics*

| Result                                    | Frequency (%) | Mean  | SD     |
|-------------------------------------------|---------------|-------|--------|
| Demographics                              |               |       |        |
| Gender                                    |               |       |        |
| Female                                    | 37 (82.2)     |       |        |
| Male                                      | 8 (17.8)      |       |        |
| Outpatient pediatric clinic setting       |               |       |        |
| Suburban                                  | 20 (45.5)     |       |        |
| Urban                                     | 15 (34.1)     |       |        |
| Rural                                     | 9 (20.5%)     |       |        |
| Patients' insurance status                |               |       |        |
| Insured                                   | 44 (93.6)     |       |        |
| Uninsured                                 | 3 (6.4%)      |       |        |
| Average age of pediatric office manager   |               | 46.6  | 12.026 |
| Average number of years worked by manager |               | 11.84 | 7.003  |

Table 2

*Employees required to follow vaccination policy*

| Result                                                     | Frequency | Percent |
|------------------------------------------------------------|-----------|---------|
| Back office staff (clinicians, medical assistants, nurses) | 39        | 83.0    |
| Front office staff (receptionist/scheduler)                | 37        | 78.7    |
| In house billing staff                                     | 30        | 63.8    |
| Administrators                                             | 28        | 59.6    |
| Support staff (custodians, IT support)                     | 16        | 34.0    |
| Other                                                      | 7         | 14.9    |

Table 3

| <i>Vaccinations included in vaccination policy</i>       |           |         |
|----------------------------------------------------------|-----------|---------|
| Result                                                   | Frequency | Percent |
| Influenza                                                | 31        | 66.0    |
| Hepatitis B                                              | 30        | 63.8    |
| Tetanus, diphtheria, and pertussis (Tdap)                | 28        | 59.6    |
| Hepatitis A                                              | 20        | 42.6    |
| Measles, mumps, and rubella (MMR)<br>or proof of disease | 20        | 42.6    |
| Chickenpox (Varicella) or proof of disease               | 16        | 34.0    |
| Other                                                    | 4         | 8.5     |

Table 4

*Refusals allowed in vaccination policy*

| Result                                                                                        | Frequency | Percent |
|-----------------------------------------------------------------------------------------------|-----------|---------|
| Refusal for religious reasons                                                                 | 27        | 57.4    |
| Refusal for medical reasons reported with written excuse from employee's health care provider | 23        | 48.9    |
| Refusal for personal beliefs                                                                  | 23        | 48.9    |
| Refusal for medical reasons reported by employee                                              | 21        | 44.7    |
| Other                                                                                         | 2         | 4.3     |
| Refusals not allowed in vaccination policy                                                    | 1         | 2.1     |

Table 5

*Documentation of employees refusing vaccinations*

| Result                                 | Frequency | Percent |
|----------------------------------------|-----------|---------|
| Standardized paper form                | 23        | 48.9    |
| Verbal confirmation in person          | 12        | 25.5    |
| Refusal not formerly documented        | 4         | 8.5     |
| Standardized electronic form           | 3         | 6.4     |
| Other                                  | 2         | 4.3     |
| Email, phone call, informal note, etc. | 1         | 2.1     |
| Don't know                             | 1         | 2.1     |

Table 6

*Information included on vaccination refusal form*

| Result                                            | Frequency | Percent |
|---------------------------------------------------|-----------|---------|
| Employee signature statement (hand or electronic) | 22        | 46.8    |
| Employee explanation for refusing vaccination     | 17        | 36.2    |
| Risk to patients (of vaccine refusal)             | 14        | 29.8    |
| Personal risk (of vaccine refusal)                | 14        | 29.8    |
| Facility rationale for requiring the vaccine      | 12        | 25.5    |
| Not applicable – Refusal not formerly documented  | 8         | 17.0    |
| Don't know                                        | 4         | 8.5     |
| Other                                             | 2         | 4.3     |

Table 7  
*Requirements for unvaccinated employees who are ill*

| Result                                                                                           | Frequency | Percent |
|--------------------------------------------------------------------------------------------------|-----------|---------|
| Employees are required to wear masks in the event of cough, rash, or fever                       | 17        | 36.2    |
| Employees are required to wear masks in the event of a cough                                     | 14        | 29.8    |
| No additional requirements                                                                       | 13        | 27.7    |
| Employees are required to wear masks in the event of a fever                                     | 10        | 21.3    |
| Employees are required to wear masks in the event of a rash                                      | 6         | 17.0    |
| Don't know                                                                                       | 3         | 6.4     |
| Other                                                                                            | 2         | 4.3     |
| Employees are restricted from patient care duties in the event of a cough, rash, or fever        | 13        | 27.7    |
| Employees are restricted from patient care duties in the event of a rash                         | 10        | 21.3    |
| Employees are restricted from patient care duties in the event of a fever                        | 10        | 21.3    |
| Employees are restricted from patient care duties in the event of a cough                        | 9         | 19.1    |
| Don't know                                                                                       | 3         | 6.4     |
| Other                                                                                            | 2         | 4.3     |
| Employees are temporarily suspended or put on unpaid leave in the event of cough, rash, or fever | 4         | 8.5     |
| Employees are temporarily suspended or put on unpaid leave in the event of cough                 | 3         | 6.4     |
| Employees are temporarily suspended or put on unpaid leave in the event of rash                  | 3         | 6.4     |
| Employees are temporarily suspended or put on unpaid leave in the event of fever                 | 3         | 6.4     |
| Don't know                                                                                       | 3         | 6.4     |
| Other                                                                                            | 2         | 4.3     |