

Managerial Practices regarding Workers Working while Ill†

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ABSTRACT

Surveillance data indicate that handling of food by an ill worker is a cause of almost half of all restaurant-related outbreaks. The U.S. Food and Drug Administration (FDA) Food Code contains recommendations for food service establishments, including restaurants, aimed at reducing the frequency with which food workers work while ill. However, few data exist on the extent to which restaurants have implemented FDA recommendations. The Centers for Disease Control and Prevention's Environmental Health Specialists Network (EHS-Net) conducted a study on the topic of ill food workers in restaurants. We interviewed restaurant managers ($n = 426$) in nine EHS-Net sites. We found that many restaurant policies concerning ill food workers do not follow FDA recommendations. For example, one-third of the restaurants' policies did not specifically address the circumstances under which ill food workers should be excluded from work (i.e., not be allowed to work). We also found that, in many restaurants, managers are not actively involved in decisions about whether ill food workers should work. Additionally, almost 70% of managers said they had worked while ill; 10% said they had worked while having nausea or "stomach flu," possible symptoms of foodborne illness. When asked why they had worked when ill, a third of the managers said they felt obligated to work or their strong work ethic compelled them to work. Other reasons cited were that the restaurant was understaffed or no one was available to replace them (26%), they felt that their symptoms were mild or not contagious (19%), they had special managerial responsibilities that no one else could fulfill (11%), there was non-food handling work they could do (7%), and they would not get paid if they did not work or the restaurant had no sick leave policy (5%). Data from this study can inform future research and help policy makers target interventions designed to reduce the frequency with which food workers work while ill.

Recent data from the Centers for Disease Control and Prevention (CDC) indicate that foodborne illness is a significant public health concern in the United States. An average of 764 foodborne illness outbreaks are reported to CDC annually (2), an estimated one in six people become ill

with foodborne illnesses annually, and 3,000 die (5, 6). Other CDC data reveal that 68% of foodborne illness outbreaks are associated with food prepared in a restaurant or deli (4). Additionally, data indicate that handling of food by an infected person or carrier of pathogens (i.e., an ill worker) is a contributing factor in 46% of restaurant-related outbreaks (3). Increasing numbers of consumers are eating meals prepared outside the home (8); thus, reducing outbreaks caused by ill food workers is critical to reduce the overall burden of foodborne illness.

The U.S. Food and Drug Administration (FDA) Food Code (9) provides the basis for state and local food codes that regulate retail food service in the United States. It contains recommendations for food service establishments, including restaurants, aimed at reducing the frequency with which food workers work while ill. Specifically, the Food Code states that restaurant management should require food workers to tell the person-in-charge (hereafter referred to as the manager) if they have had a previous illness or have a diagnosis of, exposure to, or symptoms of illnesses that are transmissible through food. These symptoms include

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vomiting, diarrhea, jaundice, and sore throat with fever. For most of these symptoms, the Food Code further states that management should exclude, or prevent from working, food workers who are experiencing them (unless they are from a known noninfectious condition). The Food Code also addresses the length of time for which food workers experiencing these symptoms should be excluded from work, when local regulatory agencies should be notified of a food worker diagnosed with an illness transmissible through food, and when regulatory agency approval is needed before a food worker diagnosed with an illness transmissible through food can return to work.

Few data exist on the extent to which restaurants have implemented FDA recommendations concerning ill food workers or on restaurant management practices concerning ill food workers. Knowledge of these issues is critical to developing effective interventions. To fill this knowledge gap, CDC's Environmental Health Specialists Network (EHS-Net) conducted a study on the topic of ill food workers in restaurants. The purpose of this study was to collect descriptive data on restaurant policies regarding ill food workers, managerial practices regarding ill food workers, and experiences of managers and workers working while ill, and to identify restaurant and worker characteristics associated with workers working while ill. Previous publications present data from this study on workers' experiences working while ill and characteristics associated with workers working while ill (1, 7). Here, we present data on restaurant policies regarding ill food workers, managers' practices regarding ill food workers, and managers' experiences working while ill.

MATERIALS AND METHODS

EHS-Net is a network of environmental health specialists and epidemiologists focused on investigating environmental factors that contribute to foodborne illnesses. EHS-Net is a collaborative project of the CDC, the FDA, the U.S. Department of Agriculture (USDA), and state and local health departments. When this study was conducted, nine state and local health departments participated in EHS-Net; these departments, or sites, were located in California, Connecticut, Georgia, Iowa, Minnesota, New York, Oregon, Rhode Island, and Tennessee.

Sample. Our study sample was composed of restaurants randomly selected from the population of restaurants located in jurisdictions in each of the nine EHS-Net sites. The jurisdictions were determined primarily by convenience and included up to 34 local public health jurisdictions (e.g., county and city health departments). California jurisdictions included the counties of Alameda, Contra Costa, and San Francisco. In Connecticut, the jurisdiction included was Hartford County. Georgia jurisdictions included Fulton, Henry, Gwinnett, Newton, Paulding, Pickens, Spalding, Rockdale, and Walton counties. Minnesota jurisdictions included the counties of Blue Earth, Carver, Dakota, Scott, Rice, and Steele. New York jurisdictions included the counties of Albany, Allegany, Cattaraugus, Chautauqua, Chemung, Clinton, Columbia, Delaware, Erie, Essex, Franklin, Fulton, Genesee, Greene, Hamilton, Livingston, Monroe, Montgomery, Niagara, Ontario, Orleans, Otsego, Rensselaer, Saratoga, Schenectady, Schoharie, Schuyler, Seneca, Steuben, Warren, Washington, Wayne, Wyoming, and Yates. Oregon jurisdictions included the

counties of Clatsop, Curry, Klamath, Lane, Lincoln, Marion, Multnomah, and Yamhill. Rhode Island jurisdictions included all five counties in the state (Bristol, Kent, Newport, Providence, and Washington). Tennessee jurisdictions included the counties of Cheatham, Dickson, Montgomery, Robertson, Rutherford, Sumner, Williams, Wilson, and the city of Nashville. Altogether, there were 38,541 restaurants in these jurisdictions at the time of data collection.

In each of the nine EHS-Net sites, we collected data in approximately 50 restaurants. Restaurants were defined as establishments that prepare and serve food or beverages to customers, excepting institutions, food carts, mobile food units, temporary food stands, supermarkets, restaurants in supermarkets, and caterers. Additionally, only one restaurant from any given regional or national chain was included from each EHS-Net site. Due to limited resources, we included only restaurants with English-speaking managers and food workers in the study.

Data collection. Our study protocol was approved by the CDC's Institutional Review Board and the appropriate institutional review boards in the participating sites. The data were anonymous; no data were collected that could identify individual restaurants or staff. CDC staff provided training designed to increase data collection consistency to all data collectors (EHS-Net staff).

Data were collected in fall 2008. EHS-Net staff contacted randomly selected restaurants in their site via telephone to request their participation in the study and arrange for an on-site visit. At the restaurant, EHS-Net staff conducted a structured interview with a kitchen manager (i.e., manager with authority over the kitchen). Food workers were interviewed as part of the overall study; these data are reported elsewhere (1, 7). The manager interview took about 20 min and occurred in a location of the manager's choosing (e.g., the manager's office, a table, or a booth). During the interview, EHS-Net staff asked the manager a series of questions and recorded the manager's answers on a paper interview form. To avoid biasing managers' responses, most questions were open-ended. However, the interview form contained response options the interviewer could use to categorize the manager responses. For example, managers were asked what they did differently at work when they worked while sick; interviewers were provided with the following options in which to categorize responses to this question: I worked shorter hours; I didn't handle food; I wore gloves; I washed my hands more often; Other. The response options were informed by pilot tests of the interview.

The manager interview assessed restaurant characteristics (e.g., number of food workers employed) and restaurant policies and practices concerning ill food workers (e.g., whether the restaurant had an ill food worker policy). To further assess management practices concerning ill food workers, managers who were able to recall the last time a food worker had worked when he or she was ill (excluding instances of injuries or chronic illnesses) were asked questions about that experience (e.g., who made the decision for the food worker to work while ill, what were the worker's illness symptoms). Additionally, managers who were able to recall the last time they themselves had worked when they were ill (excluding instances of injuries or chronic illnesses) were asked questions about that experience (e.g., why did they work while ill, what were their illness symptoms). Finally, managers were also asked to rate how likely they would be to exclude (i.e., prevent from working) food workers with specific illness symptoms. Managers rated, on a 1 to 5 scale (1 = not likely, 5 = very likely), how likely they would be to exclude food workers with five specific illness symptoms (repeated episodes of vomiting, repeated

TABLE 1. *Manager interview data on restaurant characteristics^a*

Characteristic	<i>n</i>	%
Is this an independent establishment or a chain establishment? (<i>n</i> = 425)		
Chain	198	46.6
Independent	227	53.4
Which of the following best describes the menu for this establishment—American, Asian, Mexican, Italian, or other? (<i>n</i> = 424)		
American	320	75.5
Asian	14	3.3
Mexican	20	4.7
Italian	39	9.2
Other	31	7.3
Approximately how many meals are served here on your busiest day? (<i>n</i> = 414)		
1–100	77	18.6
101–500	255	61.6
≥501	82	19.8
Approximately how long have you been a kitchen manager here? (<i>n</i> = 425)		
<1 yr	44	10.4
1–5 yr	228	53.6
6–9 yr	61	14.4
≥10 yr	92	21.6

^a Numbers vary because of missing data.

episodes of diarrhea, jaundice with yellow eyes and skin, sore throat and fever, and frequent cough). The specific interview questions can be found in Tables 1 to 5.

Data analysis. EHS-Net staff entered the data they collected in their site into a database. Using SAS 9.1 statistical software (SAS Institute, Cary, NC), we conducted univariate analysis to obtain descriptive statistics on variables of interest. We categorized responses to open-ended questions that did not fall into preexisting response options into new categories. To simplify data interpretation, we grouped responses to the questions concerning the managers' likelihood of excluding food workers with specific illness symptoms into two categories: not likely (responses of 1, 2, and 3) and very likely (responses of 4 and 5).

RESULTS

Restaurant characteristics. Of the 637 eligible restaurants contacted, 426 (66.9%) agreed to participate in the study. According to interviewed managers, approximately half of the restaurants were independently owned, and most served American cuisine (Table 1). Over 60% of the restaurants served between 101 and 500 meals on their busiest day, and approximately half of the kitchen managers had been a manager at the restaurant 1 to 5 years. The median number of food workers (hereafter referred to as workers) employed at the restaurants was seven (range = 1 to 100, 25th percentile = 4, 75th percentile = 13).

Restaurant policies regarding ill workers. More than 70% of the managers said their restaurant had a policy that they were to follow when making decisions about ill workers (Table 2). About half (53.8%) of the managers indicated that the policy was written, and most managers reported that workers were informed of the policy when they were hired.

More than 90% of the managers said their policy required workers to inform a manager when they were ill, and almost 70% said their restaurant's policy was to exclude ill workers. Seventy-three percent of the policies identified specific symptoms that required exclusion. The most frequently identified symptoms were symptoms identified in the food code: vomiting (83%) and diarrhea (81%). These were followed by the symptoms of fever (but not fever accompanied by the additional symptom of sore throat, as recommended by the Food Code) (53%), and cough (which is not identified in the Food Code as a symptom that should be reported to managers) (44%). Forty-eight percent of the policies stated a specific length of time after which workers who had been excluded were allowed to return to work. Almost 60% of policies required notification to a regulatory agency if a worker was diagnosed with a disease transmissible through food. About half of the managers said their policy required approval from a regulatory agency before the worker was allowed to return to work after being diagnosed with a disease transmissible through food.

Twenty-nine percent of managers said they typically ask ill workers if their symptoms include vomiting. Twenty-four percent said they typically ask ill workers if their symptoms include diarrhea.

Sixty percent of managers said they were paid if they missed work because they were ill. Fifteen percent of managers said workers were paid if they missed work because they were ill.

Manager practices regarding ill workers. More than 60% of managers were able to recall the last time a worker had worked while ill with a nonchronic illness (Table 3). Of those managers, 78% said the decision to work was made

TABLE 2. Manager interview data on restaurant policies regarding ill food workers

	<i>n</i>	%
Does this establishment have a policy concerning what to do when you have ill workers? (<i>n</i> = 420)		
Yes	300	71.4
No	120	28.6
Is this policy written? (<i>n</i> = 292) ^a		
Yes	157	53.8
No	135	46.2
Are food workers informed of this policy when they are hired? (<i>n</i> = 291) ^a		
Yes	252	86.6
No	39	13.4
Does the policy require workers to tell a manager when they are ill? (<i>n</i> = 295) ^a		
Yes	274	92.9
No	21	7.1
Is there a company or management policy that excludes ill food workers? By exclude, I mean that the worker is prevented from working. (<i>n</i> = 407)		
Yes	281	69.0
No	126	31.0
Does the policy identify specific symptoms that require ill food workers to be excluded, or prevented from working? (<i>n</i> = 271) ^b		
Yes	198	73.1
No	73	26.9
What are the illness symptoms? (<i>n</i> = 198) ^{b,c}		
Vomiting	164	82.8
Diarrhea	161	81.3
Fever	104	52.5
Cough	88	44.4
Runny nose	43	21.7
Sneezing	39	19.7
Sore throat	38	19.2
Cold	32	16.2
Skin infection	28	14.1
Nausea	23	11.6
Anything contagious	12	6.1
Jaundice	3	1.5
Other	20	10.1
Does the policy indicate how long ill food workers should be prevented from working? (<i>n</i> = 263) ^b		
Yes	125	47.5
No	138	52.5
Does this policy require notifying a local regulatory agency or authority if a food worker has been diagnosed with a disease that may be transmissible through handling food? (<i>n</i> = 281) ^b		
Yes	162	57.7
No	83	29.5
Sometimes	3	1.1
Unsure	33	11.7
Does this policy require that a food worker who has been diagnosed with a disease that may be transmissible through handling food receive approval from a regulatory authority or agency in order to return to work? (<i>n</i> = 281) ^{b,c}		
Yes	154	54.8
No	70	24.9
Sometimes	4	1.4
Unsure	53	18.9
If a food worker tells you he or she is ill, do you typically ask if their symptoms specifically include vomiting? (<i>n</i> = 423)		
Yes	122	28.8
No	295	69.7
Unsure	6	1.4

TABLE 2. *Continued*

	<i>n</i>	%
If a food worker tells you he or she is ill, do you typically ask if their symptoms specifically include diarrhea? (<i>n</i> = 423)		
Yes	101	23.9
No	317	74.9
Unsure	5	1.2
Do any kitchen managers ever get paid when they miss work because they are sick? (<i>n</i> = 424)		
Yes	254	59.9
No	163	38.4
Unsure	7	1.7
Do any workers ever get paid when they miss work because they are sick? (<i>n</i> = 424)		
Yes	65	15.3
No	351	82.8
Unsure	8	1.9

^a Only managers who said that they had an ill-worker policy answered this question.

^b Only managers who said that they had an exclusion policy answered this question.

^c Managers provided multiple responses to the question; thus, the response numbers add to more than 198 and percentages add to more than 100.

solely by the worker, 10% said the decision was made solely by management, and 12% said the decision was made by the worker and management together. When the managers were asked why they thought the worker worked, 45% said they thought the workers worked because they would not get paid if they did not work or because the restaurant did not have a sick leave policy. Other reasons cited by managers included that the worker felt obligated to the restaurant staff or felt compelled to work by their strong work ethic (28%), the restaurant was understaffed or no one was available to replace them (28%), and the worker felt their symptoms were mild or not contagious (25%).

Almost 90% of managers said they were aware of the worker's symptoms. None of the managers said the worker had vomiting or diarrhea, although 11% said the worker had potentially related symptoms of nausea or "stomach flu"; almost 7% said the worker had a sore throat. Jaundice was not reported. Symptoms most commonly cited were cold symptoms (55%).

Most (88%) managers said they became aware of the worker's symptoms because the worker told them, as opposed to the manager asking about or observing the symptoms. Fifty-nine percent of managers said the worker behaved differently at work due to the illness. The most commonly cited difference was working shorter hours (61%). Other behavioral differences cited were working at a slower pace, taking frequent breaks, or having lighter duties (20%); abstaining from food handling (20%); and wearing gloves or masks while working (1%).

Manager experiences working while ill. Almost 70% of managers were able to recall the last time they themselves had worked while ill with a nonchronic illness (Table 4). Of those managers, 93% said they alone made the decision to work, 5% said their management made the decision, and 2% said they and their management made the decision together. When asked why they had worked when ill, a third

of the managers said they felt obligated to their staff or they had a strong work ethic. Other reasons cited were that the restaurant was understaffed or no one was available to replace them (26%), they felt that their symptoms were mild or not contagious (19%), they had special managerial responsibilities that no one else could fulfill (11%), there was non-food handling work they could do (7%), and they would not get paid if they did not work or the restaurant had no sick leave policy (5%).

When asked what their symptoms were, about 3% of managers said they had vomiting, a similar percent said they had diarrhea, and 10% said they had nausea or "stomach flu." Almost 14% said they had a sore throat. Symptoms most commonly cited were cold symptoms (62%).

Sixty-seven percent of managers said they had behaved differently at work due to their illness. The most commonly cited difference was abstaining from handling food (53%). Other behavioral differences cited were working shorter hours (40%); washing hands more frequently (16%); working at a slower pace, taking frequent breaks, or having lighter duties (15%); and wearing gloves or masks (9%).

Managers' likelihood of excluding workers with specific illness symptoms. More than 90% of managers said they would likely exclude workers from working if they had symptoms of vomiting, diarrhea, and jaundice, with yellow eyes and skin (Table 5). Almost 80% of managers said they would likely exclude workers if they had a sore throat and fever, and 56% said that they would likely exclude workers with a frequent cough.

DISCUSSION

The results of this study provide valuable insight into U.S. restaurant policies concerning ill workers, managerial practices concerning ill workers, and managers' experiences working while ill. Indeed, these data indicate that many restaurants' policies and practices concerning ill workers do

TABLE 3. *Manager interview data on the last time a food worker worked while ill*

	<i>n</i>	%
I'd like you to think about the last time a food worker in this establishment worked his or her shift even though they did not feel well. (Manager was able to recall the last time a food worker worked while ill.) (<i>n</i> = 426)		
Yes	273	64.1
No	153	35.9
Whose decision was it for the worker to come to work? (<i>n</i> = 272) ^a		
Worker only	212	77.9
Management/owner only	28	10.3
Worker and management/owner	32	11.8
In your opinion, why did the worker work? (<i>n</i> = 273) ^{a,b}		
No paid sick leave/sick leave policy	123	45.1
Felt obligated/has strong work ethic	75	27.5
Understaffed/no staff to replace ill worker	76	27.8
Felt symptoms were mild or not contagious	68	24.9
Other	30	11.0
Did you know what the worker's symptoms of illness were? (<i>n</i> = 273) ^a		
Yes	244	89.4
No	29	10.6
What were the worker's symptoms of illness? (<i>n</i> = 244) ^{a,b}		
Vomiting	0	0.0
Diarrhea	0	0.0
Nausea/stomach flu	27	11.1
Sore throat	16	6.6
Cold (sneezing, runny nose, congestion)	133	54.5
Malaise/tired/achy	75	30.7
Cough	40	16.4
Headache	20	8.2
Other	46	18.8
How did you find out? (about the symptoms) (<i>n</i> = 273) ^a		
Worker informed manager	240	87.9
Manager asked/observed	9	3.3
Worker informed manager and manager asked	4	1.5
Someone else told manager	20	7.3
Did the worker do anything differently at work because they didn't feel well? (<i>n</i> = 271) ^a		
Yes	161	59.4
No	110	40.6
What did they do differently? (<i>n</i> = 150) ^{a,b,c}		
Worked shorter hours	92	61.3
Worked at slower pace/took frequent breaks/had lighter duties	30	20.0
Abstained from food handling	30	20.0
Wore mask/gloves	1	0.7
Other	2	1.3

^a Only managers who recalled the last time a food worker worked while ill answered this question.

^b Managers provided multiple responses to the question; thus, response numbers add to more than the *n* and percentages add to more than 100.

^c Only managers who recalled the last time a food worker worked while ill and said that the worker behaved differently at work answered this question.

not meet FDA recommendations and that some workers and managers work with symptoms of foodborne illness.

Restaurant policies regarding ill workers. Our data reveal that, according to managers, most restaurants have an ill worker policy, most restaurants inform food workers of the policy upon hiring, and most policies require workers to

tell managers when they are ill. Additionally, the majority of the restaurants have policies that address the exclusion of ill workers from work. These findings are encouraging—they suggest that most restaurant managers are aware of the risks posed by ill workers and are attempting to meet FDA recommendations concerning ill worker policies. However, a substantial number of restaurants did not meet these

TABLE 4. Manager interview data on the last time they themselves had worked while ill

	<i>n</i>	%
Now I'd like you to think about the last time you worked in this establishment when you didn't feel well. (Manager was able to recall the last time he or she worked while ill.) (<i>n</i> = 426)		
Yes	295	69.2
No	131	30.8
Whose decision was it for you to work? (<i>n</i> = 290) ^a		
Manager only	270	93.1
Management/owner only	15	5.2
Manager and management/owner	5	1.7
Why did you work? (<i>n</i> = 295) ^{a,b}		
No paid sick leave/sick leave policy	16	5.4
Felt obligated/have strong work ethic	96	32.5
Understaffed/no staff to replace manager	78	26.4
Felt symptoms were mild or not contagious	56	19.0
Management has special responsibilities	33	11.2
Non-food handling work was available	21	7.1
Other	7	2.4
What were the symptoms of your illness? (<i>n</i> = 295) ^{a,b}		
Vomiting	8	2.7
Diarrhea	10	3.4
Nausea/stomach flu	30	10.2
Sore throat	40	13.6
Cold (sneezing, runny nose, congestion)	184	62.4
Cough	38	12.9
Flu	26	8.8
Headache	19	6.4
Malaise/tired/achy	106	35.9
Other	38	12.9
Did you do anything differently at work because of your illness? (<i>n</i> = 294) ^a		
Yes	197	67.0
No	97	33.0
What did you do differently? (<i>n</i> = 197) ^{a,b,c}		
Worked shorter hours	78	39.6
Worked at slower pace/took frequent breaks/had lighter duties	29	14.7
Abstained from food handling	105	53.3
More frequent handwashing	31	15.7
Wore mask/gloves	18	9.1
Other	9	4.6

^a Only managers who recalled the last time they had worked while ill answered this question.

^b Managers provided multiple responses to the question; thus, the numbers add to more than the *n* and percentages add to more than 100.

^c Only managers who recalled they last time they had worked while ill and said that they had behaved differently at work answered this question.

recommendations. A third of ill worker policies did not specifically mention exclusion of ill workers, and most policies did not mention jaundice symptoms or sore throat and fever as symptoms that would require exclusion from work. Only about half of the policies stated a specific length of time after which workers who had been excluded were allowed to return to work, required regulatory agency notification of ill workers diagnosed with a foodborne illness, or required approval from a regulatory agency before diagnosed ill workers could return to work.

These findings are a cause for concern and indicate that restaurant policies regarding ill workers can be improved. Restaurant operators have a number of resources available

to improve their policies. Enhanced, targeted training and education for themselves, managers, and workers, for example, would be likely to improve knowledge about foodborne illness, the importance of a worker health and hygiene program, and management responsibilities. The FDA provides such training resources via their Retail Food Protection program (10). Restaurant operators and local public health officials can also check with state health officials for resources specific to their state guidance and regulations.

It is of particular concern that only about half of restaurants have their ill worker policies in written form. Policies that are not in written form, but only communicated

TABLE 5. *Manager interview data on managers' ratings of their likelihood of excluding food workers from working with specific symptoms^a*

On a scale of 1 to 5, with 1 being not likely and 5 being very likely, how likely would you be to tell a food worker with:	Very likely		Not likely	
	<i>n</i>	%	<i>n</i>	%
Repeated episodes of vomiting to stay home from work? (<i>n</i> = 424)	397	93.6	27	6.4
Repeated episodes of diarrhea to stay home from work? (<i>n</i> = 423)	387	91.5	36	8.5
Jaundice, with yellow eyes and skin to stay home from work? (<i>n</i> = 411)	381	92.7	30	7.3
A sore throat and fever to stay home from work? (<i>n</i> = 424)	332	78.3	92	21.7
A frequent cough to stay home from work? (<i>n</i> = 421)	235	55.8	186	44.2

^a Five-point rating scale responses were dichotomized into two groups. Responses of “4” and “5” were grouped as very likely; and “1,” “2,” and “3” were grouped as not likely.

verbally, may be more likely to be open to miscommunication and misinterpretation and less likely to be used than policies that are in written form. Food safety programs and the restaurant industry should consider encouraging written ill worker policies.

Manager practices regarding ill workers. Although no managers said a worker had worked with vomiting or diarrhea, some said workers had worked with nausea or the “stomach flu.” As these are possible symptoms of foodborne illness, our findings suggest that some workers work when they should not. The lack of workers working with vomiting or diarrhea (as reported by managers) is a positive finding. However, that finding conflicts with data reported by workers themselves; as reported previously, 20% of workers interviewed for this study said they had worked with vomiting or diarrhea in the previous year (7). These conflicting data suggest that managers may not be fully aware of ill workers' symptoms. Most managers said they had become aware of the ill worker's symptoms because the worker volunteered the information, not because the manager asked the worker about his or her symptoms. Additionally, fewer than a third of the managers said they asked ill workers if their symptoms specifically included vomiting or diarrhea. These data suggest that managers need to take a more proactive role in determining workers' illness status by ensuring that employees understand the causes of foodborne illness; the relationship between their tasks, personal health and hygiene, and foodborne illness; and which symptoms, exposures, and diagnoses must be reported to their managers.

The Food Code recommends that managers determine whether workers can work while ill. The fact that managers in our study reported that they were not usually involved in the decision about whether a worker should work while ill suggests that the Food Code guidance is not being met. These data correspond with data reported by workers themselves on who determines whether they can work while ill (1). Again, our data suggest that managers are not always actively involved in decisions about allowing ill workers to work.

About half of managers believed that workers worked because otherwise they would not get paid or the restaurant had no sick leave policy. However, a substantial percentage of managers mentioned other reasons for workers working

while ill, including restaurant understaffing, worker feelings of obligation or work ethic, and worker beliefs that their symptoms were mild or not contagious. These data are similar to data reported by workers themselves on why they work while ill (1), suggesting that managers may have a basic understanding of why ill workers work. These data also suggest that while financial factors (e.g., lack of sick leave) may play an important role in decisions made by ill workers, they are likely not the only factors. Other factors deserve consideration; for example, ensuring that restaurants are adequately staffed may reduce the rates of working by ill workers. Indeed, previous data suggest that this may be the case (7).

The majority of managers said that workers did something different from their usual work routine while ill. Some of these differences appeared to be related to worker comfort (e.g., worker worked at a slower pace); others appeared to be attempts to prevent others from getting sick (e.g., worker abstained from food handling). The majority of managers said that workers worked shorter hours; it was not possible to determine whether this change is related to worker comfort or foodborne illness prevention. Some behavioral changes for ill workers could reduce the potential for foodborne illness transmission.

Managers' experience working while ill. A small percentage of managers said they had worked with vomiting or diarrhea, and some said they had nausea or the stomach flu, symptoms consistent with foodborne illness. These data are striking because ill workers or managers can pose a substantial foodborne illness risk.

In contrast to the data on reasons why managers believed workers worked while ill, few managers said they had worked while ill because they would not be paid or the restaurant did not have a sick leave policy. This is not unexpected; most managers said they were paid for work days missed due to illness. However, managers did give some of the same reasons for working while ill that they also gave for workers working while ill: restaurant understaffing, feelings of obligation or work ethic, and beliefs that their symptoms were mild or not contagious. Some managers gave a reason for working while ill themselves that they did not give for workers—they said they had managerial responsibilities that no one else could fulfill. These data, along with data on restaurant understaffing and feelings of

obligation, suggest that managers may feel compelled to work, even if they do not want to or know that they should not.

The fact that some managers said they had worked while ill because there was non-food handling work that they could do suggests that at least some managers are aware of the food safety risk posed by working with food while ill and took steps to reduce the risk.

The majority of managers said they did something different from their usual work routine while ill, such as abstaining from food handling and washing their hands more frequently. These findings are encouraging because they suggest, again, that many managers are aware of the food safety risk posed by working with food while ill and took steps to reduce the risk.

Managers' likelihood of excluding workers with specific illness symptoms. The finding that a much larger percentage of managers said they would likely exclude workers from working if they had the symptoms of vomiting, diarrhea, jaundice, and a sore throat and fever than if they had a cough is positive, because it suggests that managers are aware of the importance of workers with foodborne illness symptoms not working and that managers can discriminate between foodborne illness symptoms and other symptoms. Nevertheless, enhanced education regarding which symptoms require exclusion, as opposed to restriction (i.e., workers are assigned non-food handling tasks), may help managers prioritize their staffing and financial resources.

Limitations. This study had several limitations. First, data were self-reported and, thus, may be affected by the social desirability bias (i.e., a bias in which socially desirable behavior, such as not working while ill, is overreported). Second, because only English-speaking managers were interviewed, our data may not represent non-English speaking managers. Third, because only one restaurant from any given regional or national chain was included from each site, chain restaurants may be underrepresented in our sample.

In conclusion, this study provides detailed data on, and identifies deficiencies in, restaurant policies and practices concerning ill workers. Future research and regulatory endeavors focused on addressing the policy and practice

deficiencies identified by this study could contribute to reductions in the current burden of foodborne illness caused by ill workers.

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