
Implementation and enforcement of smoke-free policies in public housing

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Abstract

Smoke-free policies such as those required by the US Department of Housing and Urban Development have the potential to reduce persistent income-related disparities in secondhand smoke exposure. To understand the implementation and enforcement process, as well as barriers and facilitators to compliance and enforcement, we conducted semi-structured interviews ($n=37$) with representatives from 23 Public Housing Authorities (PHAs) with some level of smoking restriction in place, along with residents from 14 of these PHAs, from January to August 2016. Residents were typically notified of the new policy through group meetings, new resident orientations and/or one-on-one discussions during lease renewal or annual recertification. Timing of implementation varied, with advanced notice of 6 months or a year most common. Enforcement typically involved a series of verbal and/or written warnings, followed by written notice of lease violation, and eventual notice of lease termination and/or eviction. Challenges in enforcement were generally classified as monitoring difficulties or legal concerns. Characterizing current practices (e.g. advance notice, clear communication of escalating consequences, cessation support and concrete evidence of violation) from early adopters sets the stage for identifying best practices and helps to ensure successful and fair implementation of smoke-free policies in subsidized housing.

Introduction

As of July 2018, over 2 million residents of conventional public housing are legally protected from secondhand smoke (SHS) due to the US Department of Housing and Urban Development's (HUD) new smoke-free rule [1]. Low-income individuals have higher levels of exposure to SHS than the general population, as do individuals who live in multi-unit housing [2–5]. This double jeopardy makes low-income residents of government subsidized housing especially vulnerable to SHS exposure [5]. The new HUD rule should help reduce persistent income-related disparities in SHS exposure by creating smoke-free living environments for low-income families living in public housing. Although major dimensions of the policy are mandated, flexibility remains in several areas, including the implementation timeline and enforcement process [1, 6]. Compliance with the policy and fair enforcement practices will be key to realizing the public health impact of the new HUD rule [7].

To date, much of the literature on smoke-free multi-unit housing has focused on the incursion of smoke from one unit to another, providing justification for a policy approach rather than voluntary home smoking rules within individual units [5, 8–14]. In addition, studies have explored the benefits of adopting a smoke-free policy from the perspective of decision-makers and residents, as well as perceived barriers to adopting and implementing smoke-free policies [8, 9, 12, 15–27]. Most of this

research has been quantitative and focused on privately owned affordable housing [22, 25] or a combination of multi-unit housing types, including market rate, privately owned affordable and/or public housing [8, 16, 17, 19, 26–28]. Enforcement concerns, including costs, are often identified as a barrier to adopting smoke-free policies [26, 27].

Recent studies have evaluated the impact of newly implemented smoke-free policies, with a range of study designs [28–33]. Among those based on self-report with no comparison groups, results indicate that implementation of smoke-free policies can reduce SHS exposure, decrease cigarettes smoked per day and promote cessation among those living in public or affordable housing [28–30]. A pre–post evaluation of a two-tier smoking policy (e.g. grandfathering of smokers) that used objective measures of air nicotine, documented no change in number of locations with detectable nicotine, and a decrease in levels of nicotine in public places but not private units of non-smokers [31]. MacNaughton *et al.* documented decreases in both air nicotine and particulate matter (2.5 μm or less) in buildings with a policy relative to comparison buildings without a smoke-free policy in a neighboring Public Housing Authority (PHA) [32]. A related study reported mixed results, with declines in self-reported exposure in residents of both intervention and comparison buildings, and increased cotinine levels among non-smoking residents living in intervention buildings relative to those in comparison buildings [33]. These results suggest the full range of expected health benefits is complicated by compliance, enforcement and perhaps third hand smoke.

Relatively few studies have examined the implementation and enforcement process in-depth in either public or privately owned affordable housing [8]. Stein *et al.* surveyed affordable housing property managers in North Carolina asking questions about the implementation and enforcement process, including timeline for implementation, implementation practices such as resident surveys and meetings with residents, and methods of detecting and addressing violations [34]. A survey of landlords in a Nebraska County asked similar questions [27].

More commonly, studies assess compliance through surveys with residents. In a survey of residents of eight public housing properties in Minnesota, 23.6% of residents reported SHS exposure indoors after the policy was implemented [29]. In three Colorado public housing buildings, 12% of respondents reported someone smoking in their apartment, and 39% reported smelling smoke from someone else's apartment 13–15 months post-policy. Over 60% reported SHS in entryways, stairs, hallways, porches, patios and balconies or in parking lots or on sidewalks [30]. Research conducted with the Boston Housing Authority also found significant non-compliance [35].

A study of residents of affordable housing in Portland found that smokers were generally unhappy with the policy and over 60% of smokers stated they did not adhere to the policy 5 months after it was implemented [22], although compliance had increased significantly 1 year later, at least with indoor smoking [28].

This study examines implementation and enforcement of smoke-free policies qualitatively within the context of public housing. Specifically, this study delves into the specific practices, facilitators and barriers of the smoke-free policy implementation and enforcement process in 23 PHAs in North Carolina and Georgia. These findings from interviews with early adopters of smoke-free policies in public housing will be useful for public health practitioners partnering with PHAs who are currently mandated to establish smoke-free policies, as well as to PHAs that build on the current momentum to establish smoke-free policies in government-subsidized housing not covered by the new HUD rule.

Materials and methods

Study participants

The sampling frame for this study was all the PHAs in Georgia and North Carolina that had adopted smoking restrictions for at least one of their properties. We planned to interview representatives from at least 20 PHAs or until saturation was achieved. Within eligible PHAs our sampling strategy was

purposive in that we asked to interview the individual who was the most knowledgeable about the smoke-free policy implementation process [36]. In North Carolina we recruited through existing health department collaborations and in Georgia we used snowball sampling after starting with HUD's list of smoke-free PHAs and an informational e-mail to the Georgia Association of Housing and Redevelopment Authorities listserv. We completed interviews with 23 PHAs, 13 in North Carolina and 10 in Georgia. At three of the PHAs, two people participated, resulting in 23 interviews with 26 PHA representatives. Fifteen of these PHAs had mixed funding streams with at least some properties not covered by the HUD smoke-free policy rule in their portfolio while eight were conventional and covered by the new HUD rule. We also conducted 14 interviews with 16 residents at 14 of these PHAs. PHAs identified a resident who was involved in the smoke-free policy making process or living at a property with smoking restrictions, with preference given to residents active in a resident council or resident advisory board. All interviews were conducted from January 2016 to August 2016, with PHA representative interviews averaging 60–90 min and resident interviews averaging 30–45 min. The majority of the interviews were conducted in-person, with just one PHA representative and five resident interviews conducted by telephone.

Interview guide

The interview guide covered a range of topics from the initial decision-making process to experiences with enforcement and compliance. Table I lists the interview questions that guided the portion of the interviews that we report on in this paper. Our results related to policy adoption are reported elsewhere [37]. The protocol for this study was reviewed and approved by the Emory Institutional Review Board.

Data analysis

Interviews were audio-recorded and transcribed verbatim. We adapted the codebook from an earlier study on smoke-free policies in market-rate housing, with additional codes identified through open

coding of the first few transcripts and insights from staff who conducted the interviews. After all transcripts were double coded and codes were reconciled using NVivo Qualitative Analysis Software (QSR International Pty Ltd. Version 10, 2012), reports were generated for major codes with a second round of inductive coding to identify themes. Preliminary themes were placed in matrices with themes as rows, type of PHA as columns (i.e. conventional or not) and transcript IDs in the cells. These matrices served as an audit trail to enhance trustworthiness of the findings and to aid in identifying patterns by type of PHA [38]. Trustworthiness was further enhanced by having a third analyst review the reports, confirm themes and patterns and identify quotes that illustrated themes [39].

Results

Description of study participants

The majority of the 26 PHA representatives we interviewed were women (65.4%), and White (69.2%), with a college or graduate degree (92.3%). The majority were never smokers (73.1%), with just 7.7% current smokers. Participants had typically been with the PHA over 5 years (76.9%) and were Directors/CEOs (42.3%), Chief Operating Officers (11.5%) or Directors of Asset/Property Management (19.2%). The majority were affiliated with non-conventional PHA (65.4%). The most common smoke-free policy was to restrict smoking in all indoor areas (83.3%) with variable policies for outdoor spaces. Restrictions in outdoor spaces included buffers that prohibit smoking within 10–25 feet of any building or limiting smoking to a designated smoking area, such as a bench or gazebo. Only two PHAs had comprehensive policies that restricted smoking in all outdoor spaces.

Of the 16 residents (from 14 PHAs) we interviewed, 50% were never smokers and 37.5% were current smokers. The majority were male (62.5%) and African American (68.8%). Approximately 37.5% were members of the Resident Council and 37.5% had lived on the property more than 10 years.

Table I. Interview guide questions on smoke-free policy implementation and enforcement process

PHA representative	<p>Implementation</p> <p>After the decision to adopt smoking restrictions was made, what initial steps did you take to actually implement the policy?</p> <p>How did you notify the residents about the restrictions?</p> <p>How did you involve your staff in putting the smoking restrictions in place?</p> <p>Can you describe how the policy fits into your day to day operations? For example, how does it fit into your PHA's existing practices, or your daily tasks?</p> <p>Enforcement</p> <p>The following questions are about how you enforce your smoking restrictions. By enforce, I mean take action to see that your residents are actually following the policies. First, have you had any problems with people not following the policy? If so, please tell me about that.</p> <p>About how many residents have violated the smoking restrictions?</p> <p>What steps or procedures have you used to enforce the policy?</p> <p>How effective were these methods?</p> <p>Are there any other enforcement methods in place that you have not had to use? [If yes:] Could you tell me more about that?</p> <p>How are your residents informed about the enforcement steps/processes associated with the smoking restrictions?</p> <p>What processes do you have in place for residents to report violations?</p> <p>What processes do you have in place for staff to report violations?</p> <p>What difficulties have you found in enforcing the smoking restrictions?</p> <p>What has helped with the enforcement process?</p> <p>What would have made the enforcement process easier?</p>
PHA resident	<p>The next set of questions asks about how your apartment community implemented and enforces their current smoke-free policy.</p> <p>After the decision to adopt a smoke-free policy was made, what steps did your PHA/apartment owner or managers take to actually implement the policy?</p> <p>[If Resident Council] How was the resident council involved in putting the policy into place?</p> <p>Once the policy was put into place, how did residents respond?</p> <p>What kind of system or process does your apartment community have for reporting violations?</p> <p>Have you seen or heard of any problems with compliance with the policy? That is, do you know of anyone breaking the rules restricting smoking?</p> <p>[If yes]</p> <p> What kinds of problems have you seen or heard?</p> <p> How do you think this problem/s could be addressed?</p> <p> What does your property manager (or PHA) do when they find someone breaking the smoke-free rule?</p> <p> How do you think this is going?</p> <p>[If no]</p> <p> What do you think has helped encourage people to follow the policy?</p> <p>Is there anything else you had liked to add about how your PHA/apartment owners or managers have implemented and enforced the smoke-free policy?</p> <p>What could they have done differently?</p> <p>What did they do well?</p>

Informing residents after policy adoption

We asked PHA representatives to describe the steps they took to implement the policy after the decision to adopt was made. Most said that one of their first steps was to notify residents, and most of them did this by holding group meetings or having one-on-one verbal discussions when the lease was renewed:

Later they were involved in terms of having to sit down with their contract managers and review the lease renewal language because it—it changed their lease, and we—our attorneys advised us not to unilaterally change anybody's lease, which would violate state law, so we sat down with them – the property managers sat down with them and said, here's your lease, it's renewing, here's the new section, I want you to read this and be aware of it, because it does become a condition of the lease, and it carries penalties. (Non-conventional PHA representative, NC)

The policy was also highlighted during new resident orientations and/or intake appointments. Other methods included newsletters, sending notices, letters and memos to residents, posting of fliers or notices on residents' doors, posters and brochures and local media such as newspapers or radio spots. One mentioned advertising on a smoke-free housing website and another discussed highlighting the policy on the application form. Signage was also discussed as a communication mechanism, both for residents and visitors.

Implementation timeline

A few PHA representatives discussed setting a date for the policy to go into effect for all residents. More commonly, PHAs set a date after which they would implement the policy as leases were renewed for those already living on a property. This advance warning allowed time for residents to attempt to quit smoking, adjust to smoking outside or to find a new place to live. New residents were typically subject to the policy upon signing their lease and moving in. Time between notification and implementation varied, with 6 months and 1 year of

advance notice most common, and a range from 30 days to 2 years for existing properties. The policies went into effect immediately if residents were moving into new or fully rehabilitated buildings:

We gave a six month warning or notice, and then we actually kind of phased it in, meaning that folks that were existing residents, that were smokers, they could continue to smoke in the building for six months, therefore the six month notice. New residents coming in were under a different lease at that time. We modified the lease to include no smoking, and so it was kind of a phase in for existing – they were grandfathered, if you will, for six months, before absolutely no more – got to be out at the gazebo area. And new residents coming in, they were told right away no smoking in your apartment or in the building, you have to comply to the outside gazebo area. (Non-conventional PHA representative, NC)

Resident perspectives on policy implementation

All of the PHA residents we spoke with described residents as having a fairly minimal reaction to the smoke-free policy announcement, with residents used to smoke-free environments elsewhere and accepting the rationale for the policy and/or authority of the PHA:

Nobody's ever complained. I think we're just getting used to it, because you know, in the hospitals, your jobs, and everything, I think it's just a matter of what you get used to. (Non-conventional PHA resident, GA)

Over half described reactions as positive, although some did share negative reactions from fellow residents. One smoker described:

Well, like I said, they started out at first. They were like, well, you know, if I'm paying rent, I do what I want to do in my own apartment. But then like I told them, you've got to abide by her rules. (Conventional PHA resident, GA)

Steps in the enforcement process

The enforcement process commonly involved a series of warnings, sometimes starting with verbal, always shifting to written warnings, followed by written notice of a lease violation, followed by notice of lease termination. The term eviction was used in two ways across the interviews. Some described that lease termination was essentially the same as eviction, and others restricted eviction terminology to situations that involved court proceedings.

PHA representatives generally described flexibility and room for discretion, such as referring to resident resources or other services, during the earlier part of the enforcement process, although a few described a stricter approach and the need for consistency across residents. A representative with a flexible approach described:

And as I said, the enforcement speaks to, really your first violation, it's a first warning and distribution of cessation education materials. Your second violation, you're going to get the same and then you're going to get a referral to my team over here at resident services. And we're going to come and talk with you and see if you are interested in cessation. Do you need something that is beyond kind of this self-paced cessation and you feel like you need something a little stronger. The third violation, now you're getting a written warning. You're still getting an education and you're still working with resident services to help follow up again. You may not want to quit smoking. If you want to, we want to provide the resource. But if you don't want to, what we want to do is just, we want to encourage you and engage you in a way that you will comply with the housing authority's regulation. And it is, again, the fourth violation, you're going to get a notice to vacate with the option to remedy within 30 days. If you do the cessation, if you do this or that or whatever. Fifth violation, possible termination. So by no means, is the housing authority wanting to one strike people out because they decide

they want to smoke. (Non-conventional PHA representative, GA)

A representative with a stricter approach stated:

Yes, the third would be – the letter would be, you have committed a lease violation, you have 30 days to move, blah, blah, blah, and then if they don't move in 30 days, then we take it to the next level, to fill out court papers, and that's actually starting the eviction process. It's a technicality. We – the third offense starts a lease term violation and we proceed with a lease term move out. It doesn't officially become an eviction until it goes to the courts. (Non-conventional PHA representative, NC)

Several described a fine structure, either for violations of the no smoking policy and for damages due to smoking or smoking-related cleaning costs. Fines were issued either upon the first violation or after one or two warnings. Fines of \$25–\$50 were most common, with one PHA issuing \$250 fines:

Okay, well, the first is a \$250 fine. [...] Yeah, and then the second one you get a \$250 fine as well, and then the third time is eviction. You'll get an eviction. (Non-conventional PHA representative, NC)

Challenges with enforcement

Challenges with enforcement fell into two broad categories: monitoring of compliance and legal concerns. Within monitoring, participants commented that residents sometimes deny smoking and try to hide the evidence. One representative shared:

Of course, not a lot of people are honest about it, so I've had people that say I don't smoke, but then we can sometimes smell it. But if you smell it, there's very hard – it's very hard to say, well, the maintenance guy smelled it, and then the tenant comes here and says, no, they're just – you know, they're just trying to get me. So it's – it's hard, sometimes, to enforce it, just because of that. You can't see

it, you can't take a picture of it. (Conventional PHA representative, GA)

Another elaborated on resident efforts to hide evidence of their smoking:

We've had a variety of situations occur. You know, all of the things that you used to see like, teenagers doing in the movies when we were younger, we've seen seniors try them. Standing on the toilet in the bathroom up against the vent, out the window— so there's been, a variety of those ways. [...] they're smart enough to open the drawer and drop the ashtray in there before they let you in. That doesn't mean when you open the door it doesn't hit you in the face, the smell of it, but you know, being able to prove that is an entirely different scenario. [...] we've learned other ways of doing it, from pulling filters in units to—but I think it's been a little bit of hit and miss, in trying to find ways to sort of catch the repeat offenders. (Non-conventional PHA representative, NC)

Representatives shared the difficulty of determining whether smoking is occurring because the units were not turned and old smoking residue and odor lingered. A representative described:

It's a difficult one to—to enforce, one, because other HUD rules say that we can't go into someone's apartment unless it's an emergency or they've invited us in without 24 hours' notice. So how do you catch somebody smoking in their apartment? You could—and one of the possibilities is you can go in and you can observe their—the smell of smoke, those things, but if they were smoking before the policy was in place and they've been in the apartment since then, it's going to smell—new smoke or old smoke, who knows? So from that perspective, it's a little bit difficult. (Conventional PHA representative, GA)

Other challenges related to monitoring were staff not being on the property at all times and difficulties

to monitor when buildings were spread out or units did not share an interior hallway. Other observations included the need to give 24-h notice prior to entering an apartment, few residents report complaints, difficulties to determine which unit smoke originates from, and not inspecting the units very often.

A variety of legal issues were discussed related to enforcement, including concerns about courts not evicting for smoking violations, and a need for concrete evidence of smoking such as pictures and air filters rather than complaints of smell. A representative described their approach:

... any time you do a verbal warning, you still want to follow it up with a letter. That's—you learn that under lease enforcement, that all the verbal warnings in the world don't mean anything in court. If you end up having to go to court on that person because of an eviction, you can say, I told them 100 times, and the judge is going to say, where's your documentation? So we have a certain form, we call it a conversation log. It's like, if we have a conversation with somebody—I mean, you know, not every conversation we have gets logged, but if it's something that's meaningful that we know might bite us down the road or something we need to document, we have a log that we fill out the conversation and, you know, we sign it, whoever heard the conversation signs it, also, as a witness, and we put it in their file. (Non-conventional PHA representative, GA)

Another representative described the use of photographs as evidence:

The burden of proof. You know, and I've yet to take anything to court—I mean, I can't take a smell to court. I can take photos. If you've got, again, the gross negligence where they've got ashtrays all over the place, it's pretty easy. But I can't go to court and say, well, it smelled like smoke and stuff—and then—because it could have been from previous—prior to going smoke-free, we don't know. (Non-conventional PHA representative, NC)

Other legal concerns were that some residents would hire a lawyer or go to legal aid, past legal decisions not in their favor, and that court decisions were variable across state and local jurisdictions.

PHA representatives also spoke about visitors, contractors and people who smoke while visiting the property, residents thinking they have the right to smoke in their home, and how grandfathering smokers in had caused confusion for new residents who were not allowed to smoke. Another set of PHA representatives felt that challenges had been minimal:

When people are new to a property, they want to test the limits. And that's it. But for the most part, except for those two incidents, I don't know of another issue we've had of someone smoking inside the unit. Every other smoker that we have worked with, once that policy went into place, smoked outside the unit. (Non-conventional PHA representative, NC)

Compliance facilitators

Residents' awareness of the rules, including advance notice was viewed as a key facilitator:

... the advance notice times helped, because we didn't tell anybody you've got to stop tomorrow, and we also made it clear in the discussions that we had with resident councils and with individual residents that, we're not telling you that you can't smoke, we're just telling you you can't smoke indoors, and – and so that helped, too, I think. Some of them – a lot of them we spotted really, you know – I've been looking for a reason –, I want to quit, I've been looking for a reason to quit, your policy decision is going to help me, go after some cessation stuff and see if I can quit, and so I'm not the only one that's on the cessation bandwagon, several of the residents are. (Non-conventional PHA representative, NC)

Awareness of the consequences, including their severity (i.e. possible eviction) was viewed as a significant facilitator of compliance:

I think—and it's not necessarily good—I think it's the risk of them losing their housing. And like I said, when you're in low-income housing, it's not easy to find other low-income housing. (Non-conventional PHA representative, GA)

A written policy, along with education on the policy and having each resident sign a lease that clearly stated the policy, were also seen as facilitators of compliance:

Like – like I said, over time we have made the lease and the addendum a lot more specific. We've included language that's more specific yet broad and covers more, and then we've made the penalty for it probably a little stricter. Because before, like, eviction wasn't always the option, it was you can just have a lease violation. Well, now we've learned that no, eviction needs to be an option. (Non-conventional PHA representative, GA)

Implementing the policy in a new or rehabilitated building was viewed as a facilitator as new residents moved into clean units with no lingering cigarette smells and were aware of the policy at move in. Those that did not want to live in a smoke-free building self-selected out:

Well, I think it – I think it's going okay. I think from the perspective that applicants know we're a smoke-free property, because we tell them that when they're applying, and so if you're a heavy smoker and you're going to keep smoking, well, I'm just not going to come here, so I think that's helpful. (Non-conventional PHA representative, GA)

Talking with local judges and lawyers before implementing the policy helped prevent or facilitate

court cases by making them aware of the policy and its legality before issues arose:

I think having a good conversation with legal aid and the judges helped, because when we have had to get to that point, we did have somebody who was under termination for a smoking violation try to run to legal aid and they were like, we're not touching you, it's out, you know, no, sorry, this isn't something for us. (Non-conventional PHA representative, NC)

Structural differences such as high rises, interior hallways, security cameras, on-site property management and security also facilitated enforcement. Interestingly, some felt that a comprehensive policy with no smoking allowed even outdoors was easiest to enforce, while others thought that a buffer zone and/or designated smoking area facilitated compliance. Consistency in the policy (e.g. all of the PHA's properties are smoke-free) and in enforcement were additional facilitators. Emphasizing the health message (e.g. the impact of SHS on their neighbors) and the fact that they can still smoke, just not in their apartment, helped encourage compliance with the policy according to a few. Community norms about smoking and smoke-free policies, and residents' support for the smoking restrictions were discussed as additional facilitators.

Compliance from the resident perspective

The majority of the PHA residents we interviewed felt there were 'no problems' with compliance. They explained that residents are generally 'rule followers' who respected the policy and smoked outside:

Everybody obeys the rule. That's the good part about it. That makes you feel safe, because you know, accidentally somebody could be smoking and the cigarette could fall on the floor and set the building on fire, which I hope it doesn't because don't nobody here smoke anyway. (Non-conventional PHA resident, GA)

Those that did describe compliance issues, spoke of homecare workers, party guests, family members,

and visitors violating the policy as well as some residents still smoking inside their units. One resident shared why she herself violated the policy by smoking on her porch:

I'm not going far. I go sit on my front porch, but now I think that's still breaking the rule [...] and the only reason I go on my porch because I can't get far. I got a sick husband got to be watched 24 hour. (Conventional PHA resident, GA)

Policy violations

Policy violations were typically noticed during routine inspections or through resident or staff reporting. PHA representatives described a number of regularly occurring inspections such as housekeeping and maintenance inspections. Pest control also provided an opportunity for entering units. Implementation of the enforcement provisions of the policy often involved increased vigilance for signs of smoking in units, such as ashtrays and cigarette packs. A representative described:

Well, primarily, again, that they would be following up on a problem if they got a complaint, or as they're carrying out some of their normal things, as we talk about, they're enforcing the policy during housekeeping inspections, and most of our properties do a formal housekeeping inspection once every couple of months, if not every month, and then they do annual reexaminations, and then maintenance repair is when a – when a maintenance mechanic goes into an apartment to fix something, then they can report back to the property manager, if they're saying, hey, they're – they're smoking cigarettes in here. (Conventional PHA representative, GA)

A few described modifying inspection or maintenance forms to include a field for signs of smoking. A couple commented that maintenance staff were reluctant to report signs of smoking due to concerns over the consequences for the resident.

One PHA described a system through which residents could report illegal activity, including smoking, anonymously, another described how residents slip anonymous notes to the property manager. A couple also described that residents rarely complain. The need for tangible evidence rather than just noticing the smell was described often:

So we often get them on cigarette butts and ash and stuff like that, but smells are very hard to prove anything off of. (Non-conventional PHA representative, NC)

We asked PHA representatives whether they had terminated any leases or evicted someone due to smoking. About one-third reported they had:

And to my knowledge, we've only had one true eviction in those areas. Now, this one resident had many other issues but that was the one that we knew for sure because you could smell it. And she had people that came over and smoked in her unit. So it was not just her, it was visitors. So that's the only true eviction that we have done. (Conventional PHA representative, GA)

One representative told how they had helped move someone to a building where they could smoke and another talked about losing an eviction case in court:

Well, we just had one recently. We actually processed an eviction, 30 day notice. He fought it. You know, he went through the grievance procedure, which we offer in the grievance – and then he sat there and talked them into a hearing. He denied it, and so now at this point, we – it was overturned, we let him stay, and now at this point we're just kind of keeping an eye on him. (Non-conventional PHA representative, NC)

who had adopted smoking restrictions prior to the HUD rule in Georgia and North Carolina. Since the Southeast has generally not been viewed as a leader in smoke-free public housing, understanding the process of implementation and enforcement in a conservative environment may provide especially useful information for PHAs across the country. The new HUD rule requires smoke-free buildings and a 25-foot buffer zone, but allows flexibility in other areas including steps taken as part of the enforcement process [6]. Our study findings are also relevant for properties not covered by the new rule as they undertake voluntary smoke-free policies, including non-conventional PHAs, privately owned affordable housing and market-rate multi-unit housing.

Our study confirms that early adopters of smoke-free policies generally believed it was very important to allow ample time for residents to prepare for the smoke-free policy. Advance notice gives residents who would like to quit an opportunity to do so and also allows residents an opportunity to move, although given financial constraints and long waitlists for government-subsidized housing, this may not be a realistic option for many. Six months and 1 year were the most common periods of advance notice given to residents, in contrast to findings among affordable housing properties that reported an average of 3.5 months advance notice to residents [34]. In a study in Nebraska, landlords and property management companies reported their policies were generally 'effective immediately' and some reported implementing the policy for new tenants only [27].

Our study shows some diversity in the ways that PHAs chose to enforce their own policy. Most PHAs employed a system of warnings, leading up to lease termination or eviction, with some PHAs providing resident support to encourage compliance throughout the enforcement process. Stein *et al.*'s affordable housing survey similarly documented that violations were most commonly addressed through verbal warnings, followed by written warnings [34]. Fines were relatively rare in our study and in the Stein *et al.* study. In the Cramer *et al.* study, about half sent warnings [27].

Discussion

This study presents results from interviews with residents and decision-makers affiliated with PHAs

Our study is one of the first to systematically document PHA representatives' views on factors that facilitate compliance. Facilitators can be categorized into factors that the PHA can and cannot control. For example, PHAs can: decide where they allow smoking, consistently enforce the rule, engage local government, and provide a written lease and make all residents aware of it through meetings, postings, signage and at lease signing and renewal. For the most part, PHAs do not have control over: whether their buildings are new or rehabbed, are high rises or have internal hallways or have on-site property management or security. Additionally, PHA representatives believed that making residents aware of the policy helped with compliance and this belief corresponded with resident opinions that fellow residents are generally rule followers and respect the policies.

Eight respondents in our study reported at least one lease termination or eviction, but stated that this often occurred after many warnings and/or other issues. Notice of lease termination and actual lease termination were reported in 26.6 and 21.7% of properties in the study conducted by Stein *et al.*, respectively [34]. Cramer *et al.* reported 16% had evicted at least one tenant [27]. Our respondents were generally successful with the cases that went to eviction court, with only one describing a failed attempt. Stein *et al.* reported that that all eviction cases reported in their study were upheld [34]. Also similar to the Stein study of affordable housing operators, we found that violations were commonly identified during routine inspections, resident reports of smelling cigarettes, evidence found during maintenance visits, and residents reporting they saw someone smoking.

Compliance was not viewed as a major problem by either PHA representatives or residents, although descriptions of non-compliance and enforcement actions were shared in the majority of the interviews. While a number of studies have documented non-compliance on the part of smokers [22, 29, 30, 35], enforcement from the PHA authority perspective was generally considered routine and similar to enforcement of any other lease violation, with the possible exception of challenges related to documenting the violation with concrete evidence.

Our findings would have been strengthened with triangulation of perspectives on policy implementation and enforcement at the PHA-level, as we generally interviewed only one decision-maker per PHA. Similarly, by interviewing only one resident per PHA we likely did not capture the full range of experiences and opinions about the policy from the resident perspective. Social desirability may also have been at play with both categories of participants knowing we were affiliated with a school of public health and a state health department. Thus, descriptions of compliance may have been overstated given that other studies have documented challenges with compliance, albeit not necessarily in public housing [22, 29, 30, 35].

Future research could explore the tension between lease termination, eviction and public health. No level of SHS is safe [40] and all would agree that PHAs should provide safe housing for their residents. However, housing is a basic need and the negative and cyclical consequences of eviction are also real [41]. Fortunately, with adequate advance notice, support for cessation and problem-solving for residents who continue to smoke, solutions that work are possible as evidenced by our study findings. Characterizing current practices (e.g. advance notice, clear communication of escalating consequences, cessation support and concrete evidence of violation) is an important initial step in identifying best practices. Future studies could examine associations of these practices with priority outcomes such as fewer violations and reduced SHS exposure.

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Conflict of interest statement

None declared.

References

- Federal Register. US Department of Housing and Urban Development. Instituting smoke-free public housing. 81 FR 87430. December 5, 2016. <https://www.federalregister.gov/documents/2016/12/05/2016-28986/instituting-smoke-free-public-housing>. Accessed: October 1, 2018.
 - Homa DM, Neff LJ, King BA *et al*. Vital signs: disparities in nonsmokers' exposure to secondhand smoke—United States, 1999–2012. *MMWR Morb Mortal Wkly Rep* 2015; **64**: 103–8.
 - King BA, Babb SD, Tynan MA *et al*. National and state estimates of secondhand smoke infiltration among U.S. multiunit housing residents. *Nicotine Tob Res* 2013; **15**: 1316–21.
 - Nguyen KH, Gomez Y, Homa DM *et al*. Tobacco use, secondhand smoke, and smoke-free home rules in multiunit housing. *Am J Prev Med* 2016; **51**: 682–92.
 - Wilson KM, Torok M, McMillen R *et al*. Tobacco smoke incursions in multiunit housing. *Am J Public Health* 2014; **104**: 1445–53.
 - U.S. Department of Housing and Urban Development. *Implementing HUD's Smoke-Free Policy in Public Housing: HUD Guidebook*. Washington DC: U.S. Department of Housing and Urban Development, 2017.
 - Levy DE, Adams IF, Adamkiewicz G. Delivering on the promise of smoke-free public housing. *Am J Public Health* 2017; **107**: 380–3.
 - Snyder K, Vick JH, King BA. Smoke-free multiunit housing: a review of the scientific literature. *Tob Control* 2016; **25**: 9–20.
 - Kraev TA, Adamkiewicz G, Hammond SK *et al*. Indoor concentrations of nicotine in low-income, multi-unit housing: associations with smoking behaviours and housing characteristics. *Tob Control* 2009; **18**: 438–44.
 - King BA, Travers MJ, Cummings KM *et al*. Secondhand smoke transfer in multiunit housing. *Nicotine Tob Res* 2010; **12**: 1133–41.
 - Arku RE, Adamkiewicz G, Vallarino J *et al*. Seasonal variability in environmental tobacco smoke exposure in public housing developments. *Indoor Air* 2015; **25**: 13–20.
 - Hood NE, Ferketich A, Klein E *et al*. Individual, social, and environmental factors associated with support for smoke-free housing policies among subsidized multiunit housing tenants. *Nicotine Tob Res* 2013; **15**: 1075–83.
 - Licht AS, King BA, Travers MJ *et al*. Attitudes, experiences, and acceptance of smoke-free policies among US multiunit housing residents. *Am J Public Health* 2012; **102**: 1868–71.
 - Russo ET, Hulse TE, Adamkiewicz G *et al*. Comparison of indoor air quality in smoke-permitted and smoke-free multiunit housing: findings from the Boston Housing Authority. *Nicotine Tob Res* 2015; **17**: 316–22.
 - King BA, Cummings KM, Mahoney MC *et al*. Multiunit housing residents' experiences and attitudes toward smoke-free policies. *Nicotine Tob Res* 2010; **12**: 598–605.
 - King BA, Travers MJ, Cummings KM *et al*. Prevalence and predictors of smoke-free policy implementation and support among owners and managers of multiunit housing. *Nicotine Tob Res* 2010; **12**: 159–63.
 - Gentzke AS, Hyland A, Kiviniemi M *et al*. Attitudes and experiences with secondhand smoke and smoke-free policies among subsidised and market-rate multiunit housing residents living in six diverse communities in the USA. *Tob Control* 2018; **27**: 194–202.
 - Burdette LK, Rowe GC, Johansen L *et al*. A statewide assessment of smoke-free policy in multiunit housing settings. *Nicotine Tob Res* 2014; **16**: 1593–8.
 - Farley SM, Waddell EN, Coady MH *et al*. Correlates of smoke-free housing policies and interest in implementing policies among multiunit housing owners in New York City. *J Urban Health* 2015; **92**: 291–303.
 - Cook NJ, Hollar L, Chavez S *et al*. Support for smoke-free multi-unit housing policies among racially and ethnically diverse, low-income seniors in South Florida. *J Cross-Cult Gerontol* 2014; **29**: 405–15.
 - Henrikus D, Pentel PR, Sandell SD. Preferences and practices among renters regarding smoking restrictions in apartment buildings. *Tob Control* 2003; **12**: 189–94.
 - Drach LL, Pizacani BA, Rohde KL *et al*. The acceptability of comprehensive smoke-free policies to low-income tenants in subsidized housing. *Prev Chronic Dis* 2010; **7**: A66.
 - Ballor DL, Henson H, MacGuire K. Support for no-smoking policies among residents of public multiunit housing differs by smoking status. *J Community Health* 2013; **38**: 1074–80.
 - Berg CJ, Haardorfer R, Windle M *et al*. Smoke-free policies in multiunit housing: smoking behavior and reactions to messaging strategies in support or in opposition. *Prev Chronic Dis* 2015; **12**: E98.
 - Stein A, Suttie J, Baker L *et al*. Predictors of smoke-free policies in affordable multiunit housing, North Carolina, 2013. *Prev Chronic Dis* 2015; **12**: E73.
 - Hewett MJ, Sandell SD, Anderson J *et al*. Secondhand smoke in apartment buildings: renter and owner or manager perspectives. *Nicotine Tob Res* 2007; **9**(Suppl. 1): S39–47.
 - Cramer ME, Roberts S, Stevens E. Landlord attitudes and behaviors regarding smoke-free policies: implications for voluntary policy change. *Public Health Nurs* 2011; **28**: 3–12.
 - Pizacani BA, Maher JE, Rohde K *et al*. Implementation of a smoke-free policy in subsidized multiunit housing: effects on smoking cessation and secondhand smoke exposure. *Nicotine Tob Res* 2012; **14**: 1027–34.
 - Kingsbury JH, Reckinger D. Clearing the air: smoke-free housing policies, smoking, and secondhand smoke exposure among affordable housing residents in Minnesota, 2014–2015. *Prev Chronic Dis* 2016; **13**: E111.
 - Young W, Karp S, Bialick P *et al*. Health, Secondhand Smoke Exposure, and Smoking Behavior Impacts of No-Smoking Policies in Public Housing, Colorado, 2014–2015. *Prev Chronic Dis* 2016; **13**: E148.
 - Klassen A, Lee N, Pankiewicz A *et al*. Secondhand smoke exposure and smoke-free policy in Philadelphia Public Housing. *Tob Regul Sci* 2017; **3**: 192–203.
 - MacNaughton P, Adamkiewicz G, Arku RE *et al*. The impact of a smoke-free policy on environmental tobacco smoke exposure in public housing developments. *Sci Total Environ* 2016; **557–558**: 676–80.
-

33. Levy DE, Adamkiewicz G, Rigotti NA *et al.* Changes in tobacco smoke exposure following the institution of a smoke-free policy in the Boston Housing Authority. *PLoS One* 2015; **10**: e0137740.
34. Stein AH, Baker LE, Agans RP *et al.* The experience with smoke-free policies in affordable multiunit housing in North Carolina. A Statewide Survey. *Am J Health Promot* 2016; **30**: 382–9.
35. Rokicki S, Adamkiewicz G, Fang SC *et al.* Assessment of residents' attitudes and satisfaction before and after implementation of a smoke-free policy in Boston multiunit housing. *Nicotine Tob Res* 2016; **18**: 1282–9.
36. Patton M. *Qualitative Research & Evaluation Methods*, 4th edn. Thousand Oaks, CA: Sage Publication, 2015.
37. Kegler MC, Lebow-Skelley E, Lea J *et al.* Developing smoke-free policies in public housing: perspectives from early adopters in two southern states. *Prevent Chronic Dis* 2018; **15**: E83.
38. Miles M, Huberman M, Saldana J. *Qualitative Data Analysis: A Methods Sourcebook*. Thousand Oaks, CA: Sage Publications, 2014.
39. Saldana J. *The Coding Manual for Qualitative Researchers*. Thousand Oaks, CA: Sage Publications, 2016.
40. U.S. Department of Health and Human Services. *The Health Consequences of Involuntary Exposure to Tobacco Smoke. A Report of the Surgeon General*. Atlanta, GA: Centers for Disease Control and Prevention, 2006.
41. Desmond M. *Evicted: Poverty and Profit in the American City*. New York: Penguin Random House, 2016.