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Barriers and facilitators of implementing a collaborative HPV vaccine program in an incarcerated population: A case study

Amanda Emerson^{a,*}, Molly Allison^b, Patricia J. Kelly^a, Megha Ramaswamy^b

^aUniversity of Missouri-Kansas City, School of Nursing and Health Studies, 2464 Charlotte St, Kansas City, MO 64108, USA

^bUniversity of Kansas School of Medicine, 3901 Rainbow Blvd, Kansas City, KS 66160, USA

Abstract

Background: Men and women in county jails make up a population that is difficult to reach with traditional preventive health interventions. Collaborations between local health departments and county jails represent an opportunity to enhance public health by reaching a vulnerable population with services like vaccinations. The objective of this study was to coordinate planning and implementation of a collaborative program between a local health department (HD) and a county jail to offer human papillomavirus (HPV) vaccinations to adolescents (ages 10–17) and young adults (ages 18–26) in the jail and to identify facilitators and barriers to inform future program development.

Methods: A county-municipal jail and a local HD in Kansas participated. A case study method was employed based on data collected from a focus group, telephone interviews, and site observations, September 2016 to December 2017. Data were coded using codes roughly drawn from the consolidated framework for implementation research (CFIR). Codes were then consolidated into themes related to barriers and facilitators.

Results: No adults were vaccinated; two juveniles were vaccinated. Barriers to a collaborative program to offer HPV vaccine to young adults arose in two areas: constrained resources and divergent organizational cultures and priorities. Barriers to offering HPV vaccinations to juveniles in the jail included parental consent and the unpredictable, often brief duration of juvenile detentions. A shared commitment to offering HPV vaccination services by leaders and staff in the two agencies was a key facilitator.

Conclusion: Finding ways to leverage leadership and staff buy-in and address specific barriers of constrained resources and divergent culture and priorities merits close attention, since

*Corresponding author. emersonam@umkc.edu (A. Emerson), mallison2@vet.k-state.edu (M. Allison), kellypj@umkc.edu (P.J. Kelly), mramaswamy@kumc.edu (M. Ramaswamy).

CRedit authorship contribution statement

Amanda Emerson: Formal analysis, Data curation, Writing - original draft, Writing - review & editing. **Molly Allison:** Formal analysis, Investigation, Data curation, Writing - original draft, Writing - review & editing, Project administration. **Patricia J. Kelly:** Conceptualization, Writing - original draft, Writing - review & editing, Supervision. **Megha Ramaswamy:** Conceptualization, Investigation, Writing - review & editing, Supervision, Funding acquisition.

Declaration of Competing Interest

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partnerships between jails and local HD have potential to increase HPV vaccination rates in an overlooked population and advance public health.

Keywords

HPV vaccine; Collaboration; County health departments; Jails; Implementation research

1. Introduction

The sexually-transmitted human papillomavirus (HPV) is the most common sexually transmitted infection in the United States and is estimated to affect 79 million persons [1]. HPV infection is usually cleared by the body, but persistent infection is associated with several kinds of cancer [1–3]. Since 2006, HPV has been preventable by HPV vaccine, which has proved safe, long-lasting, and effective in protecting against HPV-related cancers (e.g., cervical, vaginal, vulvar, penile, anal, rectal, and oropharyngeal) as well as genital warts and precancerous lesions. Current recommendations from the Advisory Committee for Immunization Practices (ACIP) include routine vaccination of children, ages 11–12, on a 2-dose schedule, and catch-up vaccination of adolescents and young adults in 2 doses (ages 13–14) or 3 doses (ages 15–26) [4]. HPV vaccination is most effective prior to sexual debut, but because it is rare for individuals to have been exposed to all of the high-risk HPV types, ACIP recommends vaccination of young adults up to age 26 [2,5–7]. For adults past age 26, ACIP recommends shared, patient-provider decision making (ages 27–45) [2].

Despite expert recommendation and evidence of effectiveness, HPV vaccination uptake has been disappointingly slow, with considerable variation between states and among groups [8–10]. In Kansas, the setting for this study, about 40% of 13–17 year olds report up to date HPV vaccination, meaning that they completed the series appropriate to the year in which they initiated vaccination [11]. This puts Kansas at 48/51 among states for HPV vaccination coverage [11] (Suppl. Table 3). For comparison, Rhode Island, with its mandatory school requirement, reports nearly 80% HPV vaccination coverage [11] (Suppl. Table 3). Among persons who are incarcerated, a number of social determinants and lifestyle and behavioral patterns may amplify HPV-related cancer risk, making vaccination all the more important, including ethnic and racial minority status, early sexual debut, multiple sex partners, smoking, and interrupted access to secondary (screening) and tertiary (prompt treatment) preventive services [12–15]. Studies have shown, for instance, that abnormal Pap tests and cervical cancer diagnoses occur at higher rates among incarcerated women than women in the general population [16–18].

There are approximately 2800 local jails in the US, holding about 750,000 persons [19]. Most local jurisdiction jails are administered at the level of the county, of which there are about 3142 [20]. With over 10 million admissions per year [19], county jails represent a high-impact opportunity to identify and treat potential health problems and provide preventive services like vaccination to populations that might otherwise be hard-to-reach or overlooked [21]. This may be especially true for HPV vaccination. In previous research, we found that among juveniles (average age 16) in a Kansas jail, over 80% claimed never to have heard of HPV [22]. Among adults in the same jail, 70% of women and 41% of men

were aware of the HPV vaccine, but only 13% said a doctor had ever recommended that they get it [23]. Importantly, nearly 80% of the age-eligible adults that we surveyed indicated they would “Definitely” want to get the vaccine during an incarceration if it were offered free of charge [23].

Despite the significant number of persons residing in local jails on any given day, jails are not set up for delivery of preventive care services but to secure persons safely for the duration of their sentences [21,24]. In terms of health care, this may mean treatment of acute illness or injury and maintenance therapy for chronic diseases and mental health conditions, services that are usually provided by in-house medical and nursing staff or corporate contractors [21]. When incarcerated persons are provided with vaccines, as in infectious disease outbreaks of hepatitis A or influenza, the vaccinations are often administered by local health departments. Meanwhile, similar to jails, there are also approximately 2800 local HDs in the U.S. [25]. In local HDs, vaccinating children and adults is considered an essential public health service, one that 90% of local HDs perform [26]. In this case study, we sought to learn what it would take to create a collaboration between a county jail and local HD to implement HPV vaccinations for juveniles (ages 9–18) and young adults (ages 19–26) during an incarceration. The barriers and facilitators we identified should prove useful in efforts to improve on and eventually to scale up the collaborative approach. The success of such cross-sectoral programs could have a profound impact on the health of marginalized populations while increasing the overall public health.

2. Methods

A case study method was used. We incorporated data from a 90-minute exploratory focus group with jail and local HD administrators and staff, one-on-one phone interviews with administrators at both agencies, and field observations conducted in the jail during implementation. The focus group was conducted by the second and fourth authors in a conference room at the jail. Seven HD administrators and staff and six jail administrators and staff participated. Staff members included nurses from the health department only; nurses working at the jail were not permitted to participate by their employer, a health services contractor. Focus group prompts were adapted from consolidated framework for implementation research (CFIR) constructs [27]. Subsequent one-on-one interviews with administrators from both agencies took place in person and by telephone, and observations by the second and fourth authors were recorded during implementation of the vaccination portion. IRB approval to conduct the study was received from the University of Kansas Medical Center. Informed consent was obtained from all participants.

2.1. Data sources

Data were generated in the focus group; one-on-one open-ended interviews; and field observations. The focus group was audio recorded and detailed notes were taken during interviews and observations. Outcomes data (vaccinations received) were confirmed through immunization record review by an HD nurse.

2.2. Analysis

Transcripts from the focus group and phone call interviews and field notes from observations were analyzed in three stages. First, all four authors reviewed the data, with the first and second authors coding transcripts using a code list adapted from CFIR constructs [27,28]. Second, three of the authors consolidated initial codes into broad themes exemplifying barriers to and facilitators of implementation. Finally, all four authors reviewed the resultant themes and approved illustrative passages and interpretation. Areas of disagreement were discussed and resolved through consensus.

3. Results

We found that building a collaboration between a local HD and a county jail to offer HPV vaccine to juveniles and young adults during detention in the jail was facilitated by commitment to the idea on the part of administrators and staff in the two agencies and a willingness to work together when presented with a common goal. Planning and implementation exposed barriers of constrained resources and divergent cultures and priorities.

3.1. Constrained resources

The most prominent challenges that arose in planning and piloting the program were shortages in both agencies of personnel, time, space, and funds. These resource issues emerged during the exploratory focus group and again in planning interviews with the jail and HD administrators. The barrier of resources was especially key for the young adult vaccinations, which had to be planned and implemented separately from the juveniles', since the two groups were physically and administratively segregated in the jail.

Both the local HD and jail administration and staff described shortages of personnel. In the jail, this meant overloading programming staff with new tasks related to publicizing the program, accompanying HD nurses to the adult units, and procuring parental consents for vaccination on the juvenile side. For the HD, low staffing meant fewer persons available for vaccination status verification, education, vaccine administration, and processing payment assistance. In the focus group, administrators and staff spent a fair amount of time simply trying to find a mutually workable day of the week to deliver HPV educational material to juveniles in the jail, with the HD at one point identifying a 2-hour segment on Thursday afternoons as the *only* opening they had, and the jail replying that Thursday was their busiest day.

The program presented other significant time challenges, especially for the HD. On the adult side, after an incarcerated young adult submitted an internal request in the jail and that request was processed and communicated to the HD, staff at the HD would need to verify vaccination status (i.e., any prior shots received) through the Kansas immunization registry. In most cases, the next step would be submission of a two-page application attesting to the patient's lack of insurance, which would be sent by the HD staff to the manufacturer's patient assistance program. According to HD descriptions, this process often required multiple phone calls over a day to prompt a determination. If an applicant in the jail was

eligible for the vaccine per the registry and was approved for payment assistance by the manufacturer, the HD nurse would then need to leave the HD, walk a block to the jail, wait for an escort to the patient, administer the vaccine in the unit, and wait again for an escort out of the jail. Not surprisingly, low staffing levels in both agencies meant less time to devote to a new initiative that required coordinating multiple steps of a dual-tracked (adult and juvenile), 6-month process across two agencies.

Space, a resource that was closely related to time, was another commodity in short supply. Space appointed for health care delivery in the jail was reserved for use by the corporation that provided medical services in the jail, which was not contracted to provide vaccinations. A jail administrator explained that, “Medical uses the limited medical space they have for all their providers that come in and this and that. The one kind of multipurpose room that we have, that originally was a training room, now does law library, video court, some CIT class—so that multipurpose area, to try to get in there, you’re booking way out. It’s kind of like, where would we do this?” The space issue arose again in implementation. Though only one vaccination was ever administered, the HD nurses who arrived at the jail to give the vaccine found themselves with a patient and a signed consent form but no room in which to deliver the dose and nowhere to dispose of the used needle. Since the patient was a juvenile, a therapy room on the juvenile side was located and the dose given, but the needle had to be placed in a plastic bag and disposed of back at the health department. No dedicated space suitable for health care services was available, and the issue of space was never resolved on the adult side.

As a barrier, overlapping shortages of personnel, time, and space were further amplified in a policy climate that featured reduced funding at both federal and state levels [29]. In the local HD where our pilot program was situated, administrators reported during planning interviews that funding for two major grants had been eliminated. These grants funded core services to support maternal and children’s health. State funding for public health had been cut the two previous years, and, federally, the public health budget of the CDC, which is allocated via grants to states and local HDs, was reduced by over half—from \$2 billion to under \$900 million [29]. An administrator in the HD informed our team mid-way through the study that State funds to the HD were frozen due to Congress’s non-passage of the federal budget. On the ground, an inhospitable policy and funding environment translated into immediate problems of time and personnel when one immunization nurse at the HD resigned and another nurse went on family medical leave, ostensibly leaving only two registered nurses to staff clinics in the local urban HD of the third poorest county in Kansas, home to over 150,000 residents [30].

Finally, resources and the policies by which they are allocated became an issue in relation to payment for the vaccine. Juveniles with economic need detained in the jail were not a problem, because they were covered by the Vaccines for Children program, which covers the cost of recommended vaccines delivered to patients who are unable to afford them and are 18 years old or younger [31]. Because Kansas has not passed Medicaid expansion (which would pay for uninsured young adult HPV vaccinations) [32], the local HD has relied on Merck’s patient assistance program to cover the cost of vaccinating uninsured young adults (ages 19–26) for HPV [33]. In 2017, when this study took place, Merck was transitioning

from quadrivalent to nonvalent vaccine distribution in the United States, and administrators we worked with in the HD were uncertain about the continuance of the patient assistance program, describing it at the time as “in limbo.” Further complicating matters, according to the HD administrators, the agreement between Merck and the state was that the local HD would pay up front for and use a minimum of 10 doses of the vaccine before reimbursement was made—an outlay this local HD was no longer able to afford. When we contacted the manufacturer about supplying the vaccine free of charge directly, they referred us back to the state health department which confirmed that this was the agreement and unmodifiable.

3.2. Divergent organizational cultures and priorities

Though often administered by the same county government, local health departments and county jails can be radically different places. During our exploratory focus group, differences in organizational culture—i.e., the agencies’ values, purposes, and self-understandings—and the priorities to which those differences gave rise became evident right away. In the words of one jail administrator, “For us they’re inmates, for [the HD] they’re patients. And there’s a very big divide between [their] role as the health care provider and our role as custody care control.” When asked if offering vaccinations in the jail was a priority for their organization, representatives from the HD responded, “Yeah because we have the lowest rate of HPV administration in, basically, the nation. We’re at the bottom of the totem pole. So we’ve been working very hard to try and increase those rates.” Another HD staff member added, “I think that’s part of our mission—to ensure health for our community. And so this is one piece of that.” The jail staff member who responded gave this valuation: “Probably pretty low. At the very bottom I think at this point. At the jail, the top priority, honestly, is safety. Security. It really is.”

The divergence in culture and priority translated into two issues during planning. One issue was the national criminal background checks the jail required for anyone entering an adult unit of the jail—including nurses administering vaccines. As a condition of employment at the HD, the nursing staff had already been finger-printed and completed state background checks and were opposed to completing additional background checks to provide services in the jail. Despite considerable negotiation, the adult jail would not accept the checks already completed by the HD nurses as adequate, and the HD nurses would not agree to additional background checks. With staffing shortages what they were, the HD administration was loathe to require their nurses to comply.

The other culture issue was linked to the space shortage in the jail. From the focus group on, it was fairly clear that there would be no dedicated space in the jail for administration of vaccine to adults. Proposals by the jail to provide a cart and to escort nursing staff to the housing units to deliver the shots in a kind of mobile clinic were rejected by the nurses. This strategy was first broached by jail programs personnel during the focus group where it raised no initial response. Later, the HD cited both the time it would take to implement a mobile clinic and the nurses’ safety as reasons for rejecting the idea. The HD nurses’ eventual decision only to see patients in the (off-limits) medical unit may have reflected a desire assert their identity as health care professionals, not custody care staff. In any event, with no agreement on a place for administration of vaccine, access to patients was blocked.

3.3. Leadership and staff commitment

While challenges arose around resources and organizational culture and priorities, a facilitator was the overall shared commitment to collaborating to provide vaccinations on the part especially of leaders in both agencies. Building on the commitment of leadership, we were able to broker a working relationship between the adult jail program director and a HD nurse who together developed an implementation plan for vaccinating eligible adults in the jail. The steps in the resulting protocol provide an idea of the complexity of coordinating priorities, people, and paperwork across two agencies:

1. HD staff publicize HPV vaccine through posters and pamphlets to be distributed by jail staff in jail living quarters;
2. Interested individuals submit inmate communication forms to request a vaccine consent form and provide information about health insurance or request a manufacturer's patient assistance program eligibility form;
3. Jail staff sends list of interested volunteers to HD;
4. HD staff checks [Kansas Immunization Network] to verify any previously received HPV vaccine and determines eligibility for patient assistance program; and
5. HD nurse goes to jail next day, collects completed consent forms, administers vaccine, and provides information about follow-up for subsequent doses.

Despite buy-in by leaders in the HD and jail and efforts to work out a feasible protocol, barriers related to the other features necessary to implementation—resources and prioritization—meant that this protocol was never initiated and no adults were immunized during the pilot.

For juveniles detained in the jail facility, the process to vaccinate was equally complex. But because numbers were much lower and key barriers to implementation were absent (e.g., no extra background check for nurses, fewer constraints related to space, and juveniles' eligibility for the federally funded VFC program), we were able to pilot and implement vaccinations on the juvenile side. The one challenge particular to juvenile vaccination in the jail was obtaining parental or guardian consent. Parental consent required first that a parent/guardian visit the jail, which was itself complicated by work schedules, alternative guardian situations (one youth listed their probation officer as consenting guardian), and, as we learned, parents' fears of being picked up for outstanding warrants or unpaid tickets. Most of these obstacles were surmountable, with jail staff eventually calling parents and a few consent forms being delivered via mail. Parents or guardians who visited the facility were notified of vaccine consent forms in the jail's visiting room, and completed forms were submitted to a correctional officer who emailed the names to the immunization nurse at the HD. The nurse verified names in the immunization registry, and a county HD nurses then visited the jail, confirmed consent, and administered the vaccine in a private space in the juvenile intake area. Though we met a few snags as described above in terms of space and preparedness, two juveniles were immunized using these procedures.

4. Discussion

Our attempt to implement an HPV vaccination program for juveniles and adults during a detention in a local jail required collaboration between a local HD and a county jail. The attempt met with several barriers and facilitators. Our finding that resource constraints would prove an obstacle to collaborative provision of HPV vaccine in the jail was hardly surprising, though the details were instructive. The 2800 local HDs in the United States serve areas with as few as 1000 residents to communities numbering over 8 million [29]. Funding within this complex and heterogeneous system supports a range of services, including everything from disease outbreak surveillance and investigation to restaurant safety to tuberculosis control to management of the Women's, Infants and Children (WIC) program to disaster management. About half of local health department funding comes from the federal government through Centers for Disease Control and Prevention grants to states, with another quarter coming directly from state governments [29]. Funding for local health departments has decreased overall since the 2008 economic downturn, with diminished federal and state revenues allocated for public health; further cuts in annual growth are projected to 2028, totaling over \$1 billion [29]. According to United Health Foundation, Kansas currently ranks 40th nationally in per capita dollars spent on public health [34]. With fewer dollars to allocate, local health departments—and jails, too—must find ways to meet their existing commitments while also stretching to meet recent calls for promote more inclusive preventive services, specifically by developing innovative cross-sector approaches to care delivery [35,36]. Case studies like this one demonstrate where challenges lie and suggest routes that might be followed in scaling up collaborations to meet these goals.

In the Kansas jail facility in which we implemented, as in many correctional facilities in the U.S., health care was administered by a corporate, for-profit health care entity [21]. Corporate correctional health care appears to focus on the treatment of acute problems and stabilization of mental health, with every effort made to cut costs, sometimes at the expense of inmate health [37]. When vaccinations are offered in jails, the role is often filled by local health departments, especially in situations of acute, infectious illness. Since 2018, for example, local health departments in Detroit, Michigan; Nashville, Tennessee; and in St. Louis, Missouri, publicized provision of hepatitis A vaccinations to inmates in jails to combat outbreaks (MI and TN) or, in the case of Missouri, to prevent them [22]. Other health departments do not recognize a role for themselves in providing vaccination to persons in short-term detention, even for something as contagious as influenza—which, in a closed environment such as a jail, can have deadly results [23].

While providing preventive services like HPV vaccinations in the context of a short jail incarceration makes good public health sense, it happens only rarely. Our recent survey of 237 county health departments in the four states of Iowa, Kansas, Missouri, and Nebraska found that only 2% ($n = 5$) had a current or planned jail vaccine program of any kind [38]. We are aware of no other published efforts to explore HPV vaccination through local HD and jail partnerships and only one example of attempts in the more comprehensive health care context of prison incarceration [39]. Documenting how local health departments and jails might navigate barriers to offer vaccination programs is an important step in developing effective strategies for dissemination.

In this case study, while both the HD and the jail were part of the same county government structure, each public entity had its own culture, priorities, and set of administrative procedures. An example of the complications to which these differences could give rise was the criminal background check required by the jail for all “volunteers” (or non-employees) entering the jail. Planning ahead and anticipating contingency plans to manage such conflicting aspects will be easier when a range of representatives from the participating agencies are involved at all steps of planning. The development of a complex, step-by-step protocol to vaccinate adults in the jail was one successful feature of this program, showing willingness of jail and HD representatives to come up with a detailed plan that integrated requirements of both agencies. While obstacles arose when it came time to enact the protocol, the effort highlighted focus points for future attention and demonstrated that jails and HDs, despite their differences, can be mutually motivated to collaborate. Other evidence of such willingness has been documented around mental health and HIV initiatives where, again, practical challenges like staffing, costs of services, communication, and organizational culture have made cross-sector partnerships difficult, though not impossible [26,27].

Our program was more successful with juveniles in detention, where the barriers were fewer. But even there, aspects of the intervention and setting presented difficulties. We found that the requirement of parental consent for HPV vaccination raised a host of small issues, which might have been avoided if HPV vaccination were deemed primarily a sexual and reproductive health service. In Kansas, many sexual and reproductive health services are exempted from parental consent requirements. Such exemptions for juveniles vary considerably from state to state [28]. As others have argued, and we agree, where such exemptions exist, in the case of HPV vaccinations, they ought to be applied. The option would grant adolescents, at least, the autonomy to obtain a vaccination against a sexually transmitted infection that may result in cancer, even without parental permission [40]. Exempting juveniles from parental or guardian consent for HPV vaccination would likely improve adolescent vaccine rates and reduce HPV risk in the larger population.

Limitations of this study included its single-site focus, which might limit transferability of the findings to similarly sized and circumstanced communities. Second, because we have a significant history of research collaboration in both the jail and the HD, separately, our results in bringing them together may have been skewed toward greater openness and cooperation than would be found elsewhere. Finally, a more fully articulated case would include data on interest and perceived need of those incarcerated in this jail. Since we previously published those data [22,23], we cited the perspectives on HPV vaccination of the juveniles and adults incarcerated in the jail in the introduction rather than, as would be customary and preferable, integrating details into the case study results. Even with its shortcomings, this case provides a road map and insights that can inform future work.

5. Conclusion

Health departments, given their ubiquitous presence in American communities, have the potential to meet general public health needs, including providing some forms of preventive care to correctional populations. While local HDs and jails may be amenable to working

together to provide services like vaccination, the collaborations face many real-world challenges. Our attempt to implement a coordinated interagency program to provide HPV vaccinations to patients in jail called into relief obstacles that, if anticipated, might help others in designing such programs. Examination of such partnerships, even—*perhaps especially*—in their failures, can highlight points where further planning should be focused. The eventual overcoming of obstacles to work effectively together to address public health needs will be worth the false starts and wrong turns.

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