ORIGINAL RESEARCH

Regionalization of Hospital-based Violence Intervention Programs: One Trauma Center Cannot Do It Alone

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Abstract

Aims and background: Intentional violence is a public health crisis requiring an urgent and innovative response. Prior to 2019, there was only one hospital-based violence intervention program (HVIP) in Virginia. The rise in gun violence in recent years underscored the urgent need to expand beyond a one-center approach into a regional approach to violence through a network of HVIPs. This study notes the early feasibility and implementation of the regionalization of HVIPs across competing health systems.

Materials and methods: In collaboration with several partners, an evidence-based HVIP program led a technical assistance center (TAC) and conducted site visits across nine facilities in three health systems. This was followed by a systematic, combined, regional-based approach to HVIP development. Data from each facility were collected prospectively, with point-of-care feedback given during site visits and weekly coaching sessions.

Results: Between July 2019 and June 2021, program development support from TAC included six collective seminars, 151 coaching sessions, and 67 weekly meetings with program faculty and stakeholders. HVIPs were established in nine facilities during this time, and 2,259 patients were enrolled. Over half of patients were African American (64%) and between the ages 18 and 59 (77%). Around 60 and 17% were secondary to assault and domestic violence (DV), respectively. The most common services used were information and referrals (100%) and emotional support and/or safety planning (72%).

Conclusion and clinical significance: The use of a well-established HVIP as a TAC could serve as an effective model for regionalization of violence intervention efforts, which is the next logical step in mitigating the impact of violence.

Keywords: Hospital-based violence intervention program, Intervention, Prevention, Regionalization, Violence.

Abstracto

Objetivos y antecedentes: La violencia intencional es una crisis de salud pública que requiere una respuesta urgente e innovadora. Antes de 2019, solo había un HVIP en Virginia. El aumento de la violencia armada en los últimos años destacó la urgente necesidad de expandirse más allá de un enfoque de centro único hacia un enfoque regional de la violencia a través de una red de HVIP. Este estudio señala la viabilidad e implementación tempranas de la regionalización de los HVIP en sistemas de salud competitivos.

Materiales y métodos: En colaboración con varios socios, un programa HVIP basado en evidencia dirigió un Centro de Asistencia Técnica (TAC) y realizó visitas a 9 instalaciones en 3 sistemas de salud. A esto le siguió un enfoque sistemático, combinado y de base regional para el desarrollo del HVIP. Los datos de cada instalación se recopilaron de forma prospectiva y se proporcionó retroalimentación en el punto de atención durante las visitas al sitio y las sesiones de capacitación semanales.

Resultados: Entre julio de 2019 y junio de 2021, el apoyo al desarrollo del programa por parte de TAC incluyó seis seminarios colectivos, 151 sesiones de coaching y 67 reuniones semanales con profesores y partes interesadas del programa. Durante este tiempo se establecieron HVIP en nueve instalaciones y se inscribieron 2259 pacientes. Más de la mitad de los pacientes eran afroamericanos (64%) y tenían entre 18 y 59 años (77%). El 60% y el 17% fueron secundarios a agresión y violencia doméstica, respectivamente. Los servicios más comunes utilizados fueron información y referencias (100%) y apoyo emocional y/o planificación de seguridad (72%).

Conclusión e importancia clínica: El uso de un HVIP bien establecido como TAC podría servir como modelo eficaz para la regionalización de los esfuerzos de intervención contra la violencia, que es el siguiente paso lógico en el esfuerzo por mitigar el impacto de la violencia.

Palabras clave: HVIP, Intervención, Prevención, Regionalización, Violencia.

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Introduction

Intentional violent injury is a pervasive public health crisis in the United States. In 2020, intentional violence caused 24,576 deaths, 162,674 hospitalizations, and >1 million emergency department (ED) visits, resulting in over $315.5 billion in medical costs.[1,2] Importantly, experiencing a violent injury is one of the strongest predictors of future injury,[3–9] with rates of reinjury ranging from <1[9] to 58%[3] across studies. Recurrent violent injuries incur

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significant costs to trauma centers due to more frequent visits and increased risk of postoperative complications among reinjured patients.[10,11] Trauma centers across the country have responded to this crisis by establishing hospital-based violence intervention programs (HVIPs), which capitalize on the postinjury period as a "teachable moment" in which individuals may be highly responsive to change.[12] Although violence intervention efforts have historically focused on intervening before an individual is injured, a growing body of evidence indicates that intervening immediately after one is injured has great potential to disrupt the cycle of violence.[13–15] Accordingly, HVIPs aim to prevent reinjury by connecting with high-risk patients immediately after their injury to provide them with tools for injury prevention, such as intensive case management and wraparound community services.[16]

Prior studies suggest HVIPs are a cost-effective mechanism for reducing reinjury.[16–19] Over the past 2 decades, Richmond City has been one of 77 counties in the United States to exhibit persistently high concentrations of firearm homicides, with an average of 27/100,000, which is four times higher than the national average.[20] In response, our team established an HVIP—Bridging the Gap (BTG) in 2003, which is embedded within our level I trauma center (LITC) in Richmond, Virginia. BTG is a hospital community-based violence intervention program for patients injured through community violence. BTG provides a brief violence intervention (BVI) to patients at the bedside, followed by intensive case management and wraparound services after hospital discharge.[21] BTG has been found to effectively improve violently injured and admitted patients' use of hospital and community resources and reduce violence-related risk factors such as substance use.[16] Importantly, BTG has demonstrated success at reducing reinjury rates among high-risk youth (aged 10–24 years).[16]

Until 2019, BTG was the only HVIP in Virginia. Between 2017 and 2021, Virginia had a 68% increase in firearm-related injuries.[22] This increase was not limited to Richmond City, which saw a 59% increase in firearm injury rate (FIR) ED visits but was surpassed in other areas across the Commonwealth, with FIR ranging between 52 and 129%.[22] This corresponded to a significant increase in hospital admissions, resulting in a dramatic rise in violence-related hospitalization with rates up to 45/100,000 residents.

In response to this regional, statewide public health crisis, there was an urgent need to establish multiple HVIPs throughout the Commonwealth of Virginia. Apart from the primary objective of developing multiple HVIPs across the Commonwealth in various competing health systems, which has the inherent risk of a siloed approach, a unique opportunity existed to progress from HVIP centers to an HVIP network using a regional public health approach to violence prevention. The latter has the advantage of offering practitioners, policymakers, and researchers an opportunity for collaborative program planning, development, and investigation, shared policies, and strong combined state-level advocacy. To our knowledge, the feasibility of establishing an HVIP regional network and how an established HVIP can serve as a training and technical assistance center (TAC) have not been studied previously. The goal of this study is to describe the feasibility of establishing a regional violence prevention network encompassing multiple HVIPs in competing health systems in Virginia, the role of TAC in this process, and the early phases of regionalization of violence intervention programs (Fig. 1). To achieve this, we had three objectives—(1) to understand the demographics of patients being served across HVIPs; (2) describe the services that HVIPs provided to violently injured patients within the region; and (3) describe the technical assistance training and services provided to HVIPs.

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Materials and Methods

In response to the exponential rise in firearm-related violence in recent years across the Commonwealth, the Virginia Hospital & Health Care Association (VHHA) of 25 member health systems, representing 110 communities, trauma centers, and specialty hospitals throughout Virginia, partnered with our LITC's injury and violence prevention program *via* its foundation (VHHAF), in collaboration with the Health Alliance for Violence Intervention (HAVI), and Virginia Action Alliance for sexual and domestic violence (DV), to obtain Victims of Crime ACT (VOCA) funding, for the development of HVIPs across the Commonwealth based on local needs and community resources. With its 2 decades of experience in program development, sustainment, and community networking, BTG was tasked to develop and lead an HVIP training and TAC. The task was daunting, as frameworks or guidelines to "scale-up" locally applicable HVIPs were still in development. Moreover, innovation was critical to avoiding known pitfalls in HVIP development, such as working with the wrong team, conflicting agendas, funding challenges, community mistrust/ethical standards, and more.[21] A secondary objective, outlined in Figure 1, is the development of numerous HVIPs using a regional network model akin, as much as possible, to the clinical regionalization of trauma care, where a patient can be initially enrolled in an HVIP facility without losing the "postinjury susceptible moment for enrollment," plugged into an HVIP network with shared resources (database, case management, pitfall mitigation, advocacy, and referral system) and then followed up when appropriate in the patient's community where another HVIP may be operating.

Prior research has documented decreases in mortality rates following trauma care regionalization.[23,24] Applying a regionalization model to HVIPs may offer several important advantages relative to HVIPs operating in silos. First, it can facilitate resource sharing and technical assistance between HVIPs at different stages of development, which narrows the research-to-practice gap and may enhance the efficacy of the services provided at each HVIP. The regionalization of HVIPs can increase the availability of evidence-based violence prevention services to a broader population. Additionally, HVIP regionalization within the same state or region can effectively enhance local collaborative

advocacy for public policy change that affects the social determinants of violence. Finally, regionalization may allow for more effective resource allocation, which is particularly salient for HVIPs given the rapid increase in firearm homicides in recent years. However, research examining the regionalization of HVIPs is scant.

In total, nine facilities, noted in Figure 2, were initially chosen to establish HVIPs across Virginia with a focus on either victims of community violence (with a specific focus on gun violence) or interpersonal violence (including sexual assaults and DV) in communities selected for high rates of violence, defined per the HAVI as treating facilities with greater than 100 annual violent injuries.[25] The selected facilities included two LITCs, one level II trauma center (LIITC), and six community hospitals. Three of the hospitals had dedicated Forensic Nurse Examiner teams, and one had a formal partnership with an outside agency that focused on Forensic Nurse facilities. One community hospital was removed from the study after failed attempts to secure sustained hospital leadership commitment to the program. The Virginia Department of Health divides the state into five health planning regions containing 35 health districts. The HVIP Collaborative included service areas in two health regions and nine health districts.

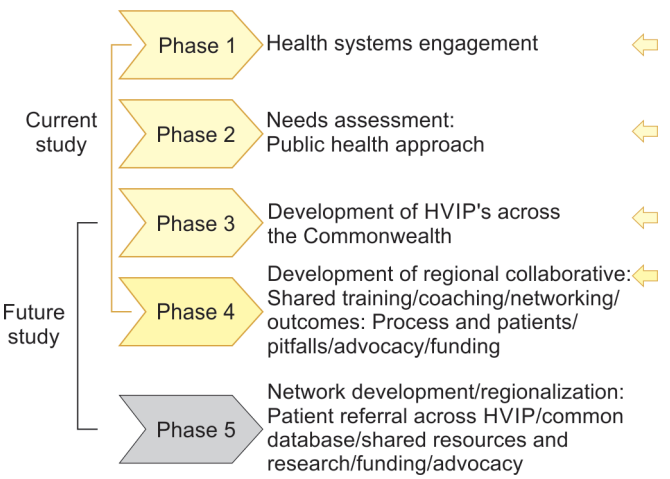

Fig. 1: Hospital-based violence intervention programs (HVIPs) development and regionalization. Development and regionalization of multiple HVIPs across competing health systems in VA will involve a phased approach beginning with engagement and buy-ins, assessment of local needs and resources, development of HVIP in a collaborative network, and finally, maturation of the process in phase 5

The TAC team members selected were composed of experienced BTG faculty and staff with diverse skills and disciplines, as noted in Table 1, along with the TAC activities provided. This was important to help guide the development of various HVIPs, each based on the proper assessment of its needs, community resources, and hospital leadership commitment. The TAC team conducted site visits across nine facilities in three health systems. This was followed by a systematic combined regional-based approach for HVIP development.

A common REDCap injury database for programming and reporting was developed and shared with the participating sites. Between July 2019 and June 2021, data from each participating facility were collected on a quarterly basis and analyzed by TAC for accuracy and feedback. This data included information on patient-level data (i.e., injury type, demographics), services provided to patients, and referrals made to community resources (i.e., housing support). Missing data is described in Tables 2 and 3 and was handled using listwise deletion.

Programming data were also collected by BTG on the technical assistance provided to each facility, collectively to the region and funder. This data was collected as part of program evaluation and quality improvement on the feasibility of a regional TAC to develop HVIP.

Patient demographic and injury information from the multiple participating sites in Virginia were collected from hospital records (and trauma registries when applicable) to provide transparency in the population being served. This is vital for understanding the generalizability of the data and understanding who HVIPs serve across Virginia and what are the demographics of people exposed to violence. This information can be useful for new HVIPs with similar populations for strategizing what priority services they could provide, as well as information to help guide TAC on needed resources and time allocation.

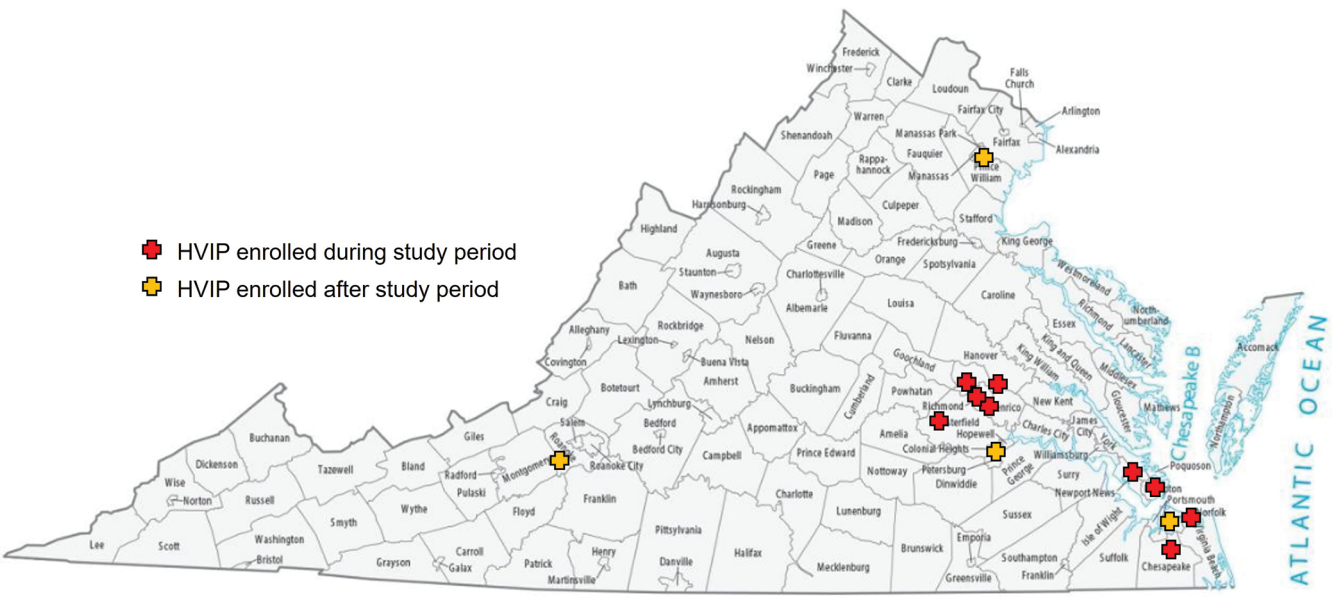

Fig. 2: Map of hospital-based violence intervention programs (HVIPs) in Virginia that were enrolled during the study period or after the study period (i.e., after July 2021)

Table 1: Technical assistance center (TAC) composition and services provided

	#	*Type*
Site visits/assessment	18	HVIP facility leadership engagement/commitment
		Facility needs/resource assessment and feedback
Seminars	6	How to start an HVIP
		Implicit bias training
		Violence as healthcare issue series
Webinars (interactive)	9	Staffing models
		Pitfalls and lessons learned
		Engaging community partners
		Meaningful data collection
		Developing and sustaining community partnerships
		Case management
		Coordinator training
		Building a community network
Coaching sessions	151	Collectively and with each participating center
Weekly meeting	67	Program faculty and stakeholders
Courses	4	The HAVI: how to start an HVIP: community violence
		VCU/IVPP: how to start an HVIP: SA/DV
		The HAVI: violence prevention professional training certification
		The HAVI supervisor training
Hours	2,427	Preparatory work, site visits, meetings, training, coaching, etc.
Team composition		Violence prevention professional
		Program coordinator/educator
		Database manager/specialist
		PhD-level evaluation/injury researcher
		Program director/trauma medical director
		Policy advocate/system navigator
		Funding agency representative

Table 2: Emergency department (ED) encounters secondary to violence at each site

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*n*	*%*
Hospital type	TC1	TC2	CH	CH	CH	CH	CH	TC1		
ED-Viol	1,102	950	980	447	758	219	1,330	1,807	7,593	100%
GSW	634	301	21	8	6	5	22	935	1,924	25%
Male	476	183	1	0	0	0	0	416	1,232	64%
Female	427	161	1	0	0	0	0	369	1,096	89%
Stab wound	49	22	0	0	0	0	0	47	136	11%
Male	136	53	3	0	0	0	0	110	302	16%
Female	97	32	2	0	0	0	0	78	239	79%
Assault	26	8	1	0	0	0	0	19	63	21%
Male	208	89	21	8	6	1	24	285	642	33%
Female	119	41	15	4	4	0	8	178	423	66%

CH, Community hospital; ED-Viol, violence related emergency department encounters; GSW, gunshot wound; TC1, level I trauma center; TC2, level II trauma center

Results

Patient and Injury Characteristics

Between July 2019 and June 2021, violence accounted for 8,598 ED visits and 1,924 (25%) hospital admissions. Most ED visits secondary to violence, noted in Table 2, did not result in admissions and were related mainly to assaults (83; 59% were female). The majority of violent assaults (69%) were seen in community hospitals and were mostly female (66%). In contrast, most gunshot wound (GSW) patients (84%) were seen in trauma centers and were mostly male (85%). Around 97% of admissions were to trauma centers. GSWs accounted for 64% of the hospital admissions secondary to violence. On average, patients were in the ED and in the hospital for 8 hours and 5.8 days, respectively.

A total of 2,259 patients were enrolled in HVIP during the study period (Table 3), with exponential admission during the 2nd year of the study. Most were African American (64%), and approximately half were male. About half (52%) of the patients were aged between

Table 3: Characteristics of HVIP patients

	Year 1, n	*Year 2, n*	*N*	*%*
Patients enrolled in HVIPs	324	1,935	2,259	100
Race/ethnicity				
Asian	0	12	12	1%
Black or African American	205	1,251	1,456	64%
Hispanic or Latino	13	86	99	4%
White Non-Latino or Caucasian	91	461	552	24%
Other race	2	39	41	2%
Not reported	13	86	99	4%
Gender				
Male	168	956	1,124	50%
Female	152	977	1,129	50%
Other (i.e., transgender, nonbinary)	3	2	5	<1%
Not reported	1	0	1	<1%
Age				
0–12	30	131	161	7%
13–17	52	183	235	10%
18–24	81	486	567	25%
25–59	147	1,027	1,174	52%
60 or older	12	93	105	5%
Not reported	2	14	16	1%
Special classifications				
Homeless	25	88	113	31%
Immigrants/refugees/asylum seekers	0	2	2	1%
LGBTQ	5	16	21	6%
Veterans	9	36	45	13%
Disabilities: cognitive/physical/mental	13	113	133	37%
Limited English proficiency	9	44	53	15%
Types of victimization				
Community violence	257	1,624	1,881	59%
Domestic/intimate partner violence	66	494	560	18%
Adult sexual assault	37	264	301	9%
Child sexual abuse/assault	33	187	220	7%

25 and 59 years, while infants and youth (0–17 years) accounted for 17% of the sample (0–12 years = 7%; 13–17 years = 10%) as noted in Table 3. A total of 360 patients (16% of total patients) were characterized as having special classifications, which included having cognitive, physical, or mental disability (37%) and being homeless (31%). Overall, most patients received treatment for community violence (59%) or domestic/family violence (18%). Reinjury rates were challenging to capture in community hospitals, but overall, rates varied between 1.1 and 3.6% over the 2 years of the study.

Patient Services Provided

Patient services provided through the various HVIPs are noted in Table 4. Direct services were provided to all injured patients and consisted of five domains, including (1) information and referral, (2) personal advocacy/accompaniment, (3) emotional support or safety services, (4) shelter/housing services, and (5) criminal/civil justice system assistance. Of the 2,259 patients, 100% received information and referrals to community services, including legal, medical, and faith-based organizations. One of the highest services provided included crisis interventions such as safety planning, as well as victim advocacy, and accompaniment to emergency medical care and medical forensic exams. Around 12% ($n = 271$) of patients received the necessary support to complete and submit victim compensation applications (i.e., Virginia's victim fund).

Technical Assistance Training

During the 2 years of implementation, 2,427 hours (or 695 instances) of technical assistance were provided to HVIPs, as noted in Table 1, with program development and coaching accounting for 50 and 23% of the time efforts, respectively. In addition, over 45 hours of training presentations and webinars were provided. These included six seminars on "how to start an HVIP, implicit bias training, violence as healthcare issue series," and nine webinars on "staffing models, pitfalls and lessons learned, engaging community partners, meaningful data collection, developing and sustaining community partnerships, case management, coordinator training, building a community network." The seminars and webinars were done collectively with all the participating HVIP centers, allowing networking and personnel engagement, experience sharing, and feedback.

Table 4: Services provided by HVIPs

Service	*N*	*%*	*Specific services*	*n*	*%*
Information and referral to community services	2,259	100	Criminal justice process info	815	36
			Victim rights info	981	43
			Referral to other supports (legal/medical/faith-based/etc.)	1,401	61
			Referral to other victim service programs	1,363	60
Personal advocacy/ accompaniment	1,193	53	Victim advocacy/accompaniment to emergency care	235	20
			Victim advocacy/accompaniment to forensic exam	698	59
			Individual advocacy (e.g., assistance in public benefits)	649	54
			Forensic exam or medical evidence collection	338	28
Emotional support or safety services	1,620	72	Crisis intervention (in-person, safety planning, etc.)	1,425	88
			Hotline/crisis line counseling	97	6
			Emergency financial assistance	203	13
			Individual counseling	122	8
Shelter/housing services	86	4	Emergency shelter or safe house	17	20
			Transitional housing	6	7
			Relocation assistance (includes assistance with housing)	66	77
Criminal/civil justice system assistance	88	4	Notification of criminal justice events	28	32
			Civil legal assistance (protection or restraining order)	11	13
			Law enforcement interview advocacy/accompaniment	54	61
			Other emergency justice-related assistance	14	16

Discussion

Empirical evidence suggests that the regionalization of trauma centers can lower mortality rates.[23] However, despite its potential advantages, limited research has examined the regionalization of HVIPs. The focus of this study was to describe the feasibility and process of developing a coordinated system of HVIPs in Virginia and describe initial findings, including descriptive statistics of the patients who are receiving HVIP services, the types of HVIP services provided to patients, and the training and technical assistance provided to HVIPs. A secondary aim of this study is to describe challenges and lessons learned in the process to aid other HVIPs in abandoning their theoretical silos for a more coordinated approach to hospital-based violence prevention and intervention.

One early recognition in the Virginia HVIP collaborative was the early involvement of the HAVI and the acknowledgment that the presence of an already established HVIP and HAVI program member, such as BTG, which had existing relationships with the other local Virginia centers, can serve as a trusted model and a TAC to other health facilities in the Commonwealth of Virginia with locally applicable solutions without the need to reinvent the wheel for HVIP establishment. The composition of the TAC team with seasoned and diverse faculty and skills based on 2 decades of experience was essential in this process to ensure that proper and comprehensive site assessments were done to allow the various facilities in the Commonwealth to develop an HVIP based on their needs, community resources, and relationships. The development of an HVIP in trauma centers was heavily based on a hospital-community-based intervention model, with significant input and guidance for inhospital approach and wraparound services. These were mainly established in the trauma centers and focused on patients with traumatic injuries caused by community violence, which was the majority of their population. For the community facilities, the intervention programs were mostly focused on timely ED intervention and follow-up, with a major focus on sexual abuse and intimate partner violence. In our study, domestic and intimate partner violence accounted for 18% of victimization. The presence of forensic teams is integral to HVIPs dealing mostly with sexual abuse and intimate partner violence. In our study, only three facilities had well-developed forensic resources. This again speaks to the variability within each center and the need to develop tailored HVIPs based on need and local resources.[26] A regionalized approach also allows for targeted advocacy for programs that lack these resources.

Our study goes a step further by redefining the role of an established HVIP in developing a network of HVIPs in its region with sustained ongoing joint education, training, mentorship, and, most importantly, local advocacy for sustained funding. This is a distinguishing factor from other regions or states with no HVIP. For those, there are significant resources for new and emerging HVIPs on the HAVI website. Another important finding is the partnership of the lead HVIP (i.e., BTG) with an established alliance of hospitals and healthcare systems, such as VHHA, with a foundation arm and an advocacy arm, both instrumental in HVIP sustainability. VHHA Foundation, as a sponsoring and coordinating agency for the Virginia HVIP collaborative, was instrumental in securing awards from the Virginia Department of Criminal Justice Services with funding from the VOCA and the American Rescue Plan Act to implement and sustain the collaboration.

The demographic and injury characteristics of patients enrolled in one of the nine HVIPs during the study period highlight the need for HVIPs to offer intervention services (e.g., case management) that can be adapted to meet a wide variety of patient needs. For

instance, the results of this study indicate that a GSW is the most common mechanism of injury among hospital admissions and, consistent with prior work, men are overrepresented among GSW patients.[1,2] On the contrary, nearly one in five patients in the sample were injured as a result of DV, which disproportionately affects women.[27] To date, limited research has examined how the effectiveness of HVIPs varies by mechanism of injury or type of violence. By connecting with HVIPs in different regions of the state, our trauma center was able to provide technical assistance and training to other HVIPs in the region. Although this study did not assess the degree to which regionalization improved HVIP services, we believe the findings of this study support the notion that the regionalization of HVIPs is a critical and ethical opportunity to minimize the research-to-practice gap and ensure patients receive the most effective treatments available. As noted in Figure 1, this study mainly focuses on the very early process of regionalization through a collaborative approach for the establishment of various HVIPs in the Commonwealth. Patient referrals across HVIPs based on patients' intervention needs and available resources will be the subject of a future study awaiting the maturation of the system.

Another important finding from this study is that, on average, patients were in the ED for an average of 8 hours. For violence prevention professionals (VPP) to connect with patients inhospital, there needs to be an efficient system in which VPPs are notified of admissions as soon as possible. Moreover, an HVIP capacity must be able to support the patient volume of the institution to ensure that VPPs can meet with patients and provide services to admitted patients on short notice. Notably, admitted patients were in the hospital for an average of 5.8 days. HVIPs with limited resources may consider focusing on enrolling admitted patients in their services, with the goal of developing additional capacity to serve patients who are not admitted. Importantly, the regionalization of HVIPs may represent an even more sustainable solution to addressing capacity and technical assistance needs.

Across the nine HVIP sites, most patients were provided with information and referral (100%) and emotional support or safety services (72%). Prior research has found that an inhospital BVI with community case management is an effective tool for reducing rates of reinjury.[15,16] Although information and referral are services that are fundamental to the effectiveness of HVIPs, data presented in this study suggest that emotional support is a critical need among patients with violent injury. This is consistent with prior research documenting high levels of depression and posttraumatic stress disorder among patients with a violent injury.[28] Consequently, HVIPs should be prepared to provide these services to patients. The regionalization of HVIPs may be particularly beneficial for HVIPs who are not currently providing this service, as it can increase their access to training and technical assistance support to broaden their service portfolio.

The regionalization of HVIPs greatly expanded training and technical assistance across the programs. As a TAC, our goal was to share our knowledge from lessons learned as an HVIP from 2 decades of experience. Our workshops aimed to provide HVIPs uniformed training to help increase HVIP implementation of evidence-based practices, as well as provide an opportunity for collaboration between HVIPs. Within the 2-year period, the TAC provided 695 touchpoints (2,427 hours) of technical assistance. Over half of these total hours spent were focused on material preparation (i.e., workshop planning, database development, and survey/intake assessment development), internal meetings to support the implementation of the technical assistance, and meetings with the funding agency to provide updates and reports. Direct services provided to HVIPs included site visits, training, workshops, webinars, and on-call support, resulting in over 800 hours of support and training. This highlights that being a TAC requires a significant amount of expertise and resources and requires thoughtful consideration in fund allocation and distribution. We hope this information is helpful to other regions and US states who are considering the simultaneous implementation of various HVIPs based on the recent and uniform rise in violence.

Limitations

This study has several limitations to consider. First, the degree to which these findings may generalize to other HVIPs and HVIP systems located in other regions of the country is presently unknown. Second, due to the urgent need for the regionalization of HVIPs, preintervention data were not collected. Future studies should investigate the effectiveness of HVIPs before and after regionalization. Third, because implementation occurred throughout the course of the study period, potential sources of bias are not accounted for in this study (e.g., demographic subgroup differences in service utilization, influence of site characteristics on implementation, etc.). Fourth, although we presented a range of reinjury rates across the participating facilities (1.1–3.6%), reinjury rates were reliably calculated for one trauma center with no sufficient or reliable data in the emergent HVIPs to calculate the regional recidivism rate. This is not surprising as it takes >2–3 years for program maturity. There was a recognizable challenge in the establishment of evidence-based HVIP programs in health systems, where mechanisms for rigorous academic program development and evaluations were not present. In our Virginia HVIP collaborative, BTG is the only HVIP associated with a university and a large academic center with a team of researchers embedded with the case management process. The findings of this study based on a well-established HVIP model (BTG) with a 3.6% sustained recidivism rate would suggest that HVIP regionalization may serve as an effective mechanism to reduce rates of reinjury.[16,21] However, reliable recidivism rates from other centers, and regionally, will need to wait for full implementation and maturity of HVIPs across the regions. We hope to address this limitation in our future work once the regionalization is fully implemented.

Conclusion

Prior to the implementation of the TAC, there was only one HVIP in Virginia. The 2 decades of experience of BTG and its established association with the HAVI and VHHAF positioned it well to help support the development of new HVIPs and prevent them from costly pitfalls by learning from our successes and challenges (see Aboutanos et al.,[21] for a full review of the 10 lessons learned). With this experience, we have learned that no single hospital can do it alone. As a TAC, our goal has been to move away from the practice of siloed HVIPs and establish regionalized operations to help make sweeping violence prevention efforts in Virginia serve as a national model for the regionalization of HVIP and redefine the role of an established HVIP in developing a network of HVIPs in its region. What we have achieved in this short time is the ability for HVIPs to share resources (i.e., expertise, community resources), implement evidence-based intervention, increase inter-HVIP communication, synchronize data collection and reporting, standardize HVIP training, and establish a core network of HVIPs to work in collaboration instead of being siloed. Collectively, these

efforts have helped improve resource and service access for patients and, therefore, increased patient care. What will be important, and we plan to do in our next study, is to highlight how this network and collaborative work, with key partnerships and stakeholders, led to effective lobbying to policyholders in Virginia to sustain funding for HVIPs at the state and federal level.

Clinical Significance

Although we recognize the generalizability of this pilot program may be limited in some respects, we believe the use of a well-established HVIP as a TAC could serve as an effective model for the regionalization of violence intervention efforts. Throughout this paper, we have provided information demonstrating the capacity and high rates of service provision we were able to accomplish using this approach. The regionalization of HVIPs is the next logical step in the effort to mitigate the impact of violence.

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