

Psychiatric Characteristics of Homicide Defendants

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Objective: The authors examined the rate of mental disorders in an unselected sample of homicide defendants in a U.S. jurisdiction, seeking to identify psychiatric factors associated with offense characteristics and court outcomes.

Method: Defendants charged with homicide in a U.S. urban county between 2001 and 2005 received a psychiatric evaluation after arrest. Demographic, historical, and psychiatric variables as well as offense characteristics and legal outcomes were described. Bivariate analyses examined differences by age group and by race, and logistic models examined predictors of multiple victims, firearm use, guilty plea, and guilty verdict.

Results: Fifty-eight percent of the sample had at least one axis I or II diagnosis, most often a substance use disorder (47%). Axis I

or II diagnoses were more common (78%) among defendants over age 40. Although 37% of the sample had prior psychiatric treatment, only 8% of the defendants with diagnosed axis I disorders had outpatient treatment during the 3 months preceding the homicide; African Americans were less likely than non-African Americans to be in treatment. African American males were more likely to use a firearm and to have a male victim. In exploratory analyses, psychiatric factors did not predict multiple victims, firearm use in the crime, or a guilty verdict.

Conclusions: Rates of axis I disorders were lower than reported in previous studies. Few homicide defendants were in psychiatric treatment at the time of the crime, suggesting limited opportunities for prevention by mental health providers.

(*Am J Psychiatry* 2013; 170:994–1002)

Homicide is a major public health concern in the United States. Approximately 15,000 homicides occurred annually over the past decade, with racial minorities, men, and people under age 25 disproportionately represented as both homicide victims and offenders (1, 2). The trauma inflicted by homicide touches victims, families, the community, and offenders. Forensic mental health practitioners are regularly called to testify in court proceedings of homicide defendants, yet data on the psychiatric characteristics of individuals accused of homicide in the United States remain limited. Additional empirical information about the relationship between psychiatric disorders and homicide could help inform both policy and practice regarding this enduring social problem.

In general, researchers have found higher rates of mental disorders in homicide offenders than in the general population, with Northern European studies providing most of the information about prevalence rates. Gottlieb et al. (3), looking at psychiatric records in Copenhagen, reported that 23% of homicide defendants suffered from psychosis at the time of the incident, mirroring Fazel and Grann's estimate (4) that 20% of their Swedish sample had a psychotic illness and 90% had at least one psychiatric diagnosis. Lindqvist (5), also reviewing Swedish records, reported that 53% of homicide offenders had a mental disorder, although specific diagnoses are not reported. In contrast, Shaw et al. (6) reported that 34% of 1,594 people convicted of homicide in

the United Kingdom had a mental disorder, and Côté and Hodgins (7) reported rates of 12% for schizophrenia, 15% for major depression, and 5% for bipolar disorder in a sample of 87 homicide convicts in Quebec.

Estimated rates of disorders among perpetrators of homicide can vary considerably depending on the sample chosen (e.g., exclusion or inclusion of individuals ordered to psychiatric hospitals) and the sources of diagnostic information. Northern European studies have had the benefit of psychiatric data on a substantial portion of individuals convicted of homicide within a defined geographic area regardless of ultimate judicial disposition. Additionally, the arrest and prosecution rates in Scandinavian countries are high, and information is available on a large proportion of offenders (4, 8).

The applicability of the results of these studies to the United States is questionable because of the historically higher base rate of homicide in the United States and differences in the social and demographic composition between the United States and other countries. U.S. studies have examined rates of mental illness among incarcerated individuals but have not generally provided prevalence rates by offense. The prevalence of current psychotic symptoms among individuals in criminal justice facilities has been estimated to be between 9% and 24% (with higher rates among female inmates and among jail inmates as opposed to prison inmates), and the prevalence of any

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psychiatric problem has been found to be as high as 91% (9–12). About 68% of inmates are reported to have a substance use disorder (13).

The association between having a mental disorder and the commission of homicide is unclear. A Finnish study found that schizophrenia and antisocial personality disorder both increased the odds of homicidal violence (8), and a U.S. study found that inmates with any psychiatric disorder, a bipolar disorder, or a psychotic disorder were more likely than inmates without mental illness to be incarcerated for assault (14). With respect to homicide, one study found that inmates who had a psychiatric disorder did not have higher homicide rates than inmates without a disorder, while another found that inmates with a psychotic disorder had higher rates of homicide (11, 14).

Some information on the psychiatric characteristics of homicide defendants in the United States is available from referred samples. In a review of a series of 100 homicide defendants referred for psychiatric evaluation, Yarvis (15) found that 29% had schizophrenia, 35% had substance-related conditions, and 74% had an axis II disorder. Dwyer and Frierson (16) and Frierson and Finkenbine (17), in detailed examinations of the psychiatric and neurologic characteristics of homicide defendants referred for evaluation in South Carolina, found that 91% of the referred sample had an axis I or II disorder; 8% had a psychotic disorder, 13% a mood disorder, and 13% a personality disorder. Hanlon et al. (18), examining 77 indigent murder defendants and death row inmates referred by their attorneys for neuropsychological evaluation, found elevated rates of developmental (49%), personality (54%), axis I (45%), and substance use (86%) disorders.

Given that these U.S. studies examined individuals referred for clinical assessment, their results reflect patterns seen in individuals for whom a judge or attorney had raised a concern about competence to stand trial or criminal responsibility. Thus, these studies inform us of the diagnoses of a selected sample of homicide offenders but do not provide data on homicide offenders more generally. It is therefore not surprising that the rates of mental illness observed in these studies vary considerably, probably because of differing referral patterns across jurisdictions. These studies also do not provide an accurate assessment of the relationships between case characteristics and features of the homicide offense, since selection bias could affect any patterns observed. To our knowledge, there has been no previous study of the psychiatric characteristics of an unselected group of homicide offenders in the United States or an examination of the relationship of mental disorders to case outcomes in such a sample (19).

In this study, we examined an unselected sample of homicide defendants. All individuals charged with homicide in a metropolitan area received a forensic psychiatric evaluation. We report the psychiatric and demographic characteristics of these defendants, examine characteristics

of their offenses, and explore associations of the case characteristics and disposition.

Method

We coded psychiatric evaluation files (N=278) and available matching court case files (N=208) for unselected defendants charged with criminal homicide in Allegheny County, Pennsylvania, between 2001 and 2005, excluding cases of vehicular homicide. During the sampling time frame, local court rules mandated that all individuals arrested on a charge of criminal homicide receive a psychiatric evaluation within 48 hours of arrest to assess competence to stand trial and acute treatment needs. Behavior Assessment Unit staff psychiatrists and forensic psychiatry fellows conducted these clinical interviews, which took approximately 30 minutes.

In approximately 70% of the sample, staff social workers completed a template form to collect collateral information; in the remainder, the collateral contact could not be reached or refused to cooperate. In some cases, the evaluators also had access to affidavits of probable cause, records from a state hospital, and copies of prior assessments for the court (including reports of prior arrests). Official criminal records and results of psychological testing were not routinely available.

A standard reporting format was followed in the resulting three- to six-page narrative assessments. These contained demographic data, circumstances of the current arrest, legal history, mental health history, medical history, social history, a mental status examination, and any diagnoses established on axes I, II, and III. Opinions regarding competence to stand trial were explicitly stated, as well as disposition recommendations, if relevant. Structured diagnostic instruments were not used.

All records were the property of the court and were not part of the individual's medical record. Their use in this study was authorized by the court's president judge. The University of Pittsburgh Institutional Review Board reviewed and approved a waiver of informed consent for examination of these court records.

Two individuals trained and supervised by the study's senior investigators coded the records. The investigators and coders held consensus meetings biweekly to review the coding process and to resolve ambiguities. Coders reviewed data for consistency when coding rules were revised.

Stata/SE 10 and 12 (StataCorp, College Station, Tex.) were used for data analyses. Chi-square or Fisher's exact tests were performed as appropriate for cross-tabulated categorical data. Continuous variables were compared with *t* tests or between-group analysis of variance. Given low outcome base rates and small sample sizes, logistic models were examined using a penalized log likelihood adjustment for complete or partial separation to correct bias (20, 21). Likelihood ratio chi-square tests were performed to explore differences between nested groups of variables in penalized logistic models, after examining patterns of missing data.

Results

Assessment of Missing Data

Two sources of data were used: Behavior Assessment Unit reports and court case files. The assessment unit reports provided background and clinical information, while the court case files provided information on adjudicative outcomes. Most individuals with Behavioral Assessment Unit reports had court case file information available

(208/278; 75%). To assess bias related to the availability of these reports, we examined differences between the subsamples on 40 demographic, historical, clinical, and offense characteristics, using Fisher's exact tests, chi-square tests, or t tests and a Bonferroni correction for multiple comparisons. There were no significant differences between groups on any of the variables, suggesting that data from court case files were missing at random. For logistic models with differing group sizes depending on the outcome examined, patterns of missing data in groups of variables were also examined, and no significant patterns emerged (information available on request from the authors).

Sample Characteristics

Demographic, historical, clinical, and offense characteristics and judicial outcomes for the overall sample are summarized in Table 1. The sample was relatively young (median age, 22 years), largely African American (79%), and mostly male (93%). Nearly all (94%) were unmarried or separated. These individuals had previous involvement with the criminal justice system but were not necessarily career criminals. Ninety percent had at least one arrest, and 16% had served penitentiary time, but 44% had no previous adult convictions.

The sample had a moderately high rate of mental disorders. Fifty-eight percent of defendants had at least one axis I or axis II diagnosis. The most common diagnosis was a substance use disorder (47%), and a majority of those with such disorders (100/132; 76%) had no other axis I disorder. Among the 17% of defendants with a non-substance use axis I disorder, the most common were affective disorders, 71% of which were a depressive disorder. A small number of defendants (N=10; 4% of the total sample) had a psychotic disorder. Only 5% of the sample had a diagnosis of antisocial personality disorder.

Despite a relatively high rate of diagnosed mental disorders, treatment involvement in the sample was limited. Thirty-seven percent of the sample had a lifetime history of prior psychiatric treatment, either in the hospital or on an outpatient basis. Among defendants with at least one axis I diagnosis, only 8% had outpatient treatment in the 3 months preceding the offense; African Americans with at least one axis I diagnosis were less likely to have received recent treatment (3% compared with 28% for non-African Americans; $p=0.001$).

The homicides committed in this group predominantly involved incidents between two males (73%). Most of the homicides involved use of a firearm (73%). Overwhelmingly, these defendants (84%) either pleaded guilty or were found guilty at trial. Sentences varied widely, from maximum sentence lengths of less than 20 years (31%) to 20 to 40 years (28%) or life (40%).

Table 1 presents descriptive characteristics of subsamples with no axis I diagnosis, a substance use disorder only, comorbid substance use and non-substance use

disorders, and a non-substance use axis I disorder only. As indicated in the bivariate relationships with the substance use disorder only group, defendants who had a non-substance use axis I disorder only were older, more likely to be female or married, and less likely to be involved in a male-on-male homicide or to have used a firearm in the offense.

Age, Gender, and Race

The prevalences of psychiatric diagnoses by age group are presented in Table 2, and offense characteristics in male defendants are summarized in Table 3. Rates of having any mental disorder, a non-substance use axis I disorder, a mood disorder, or a personality disorder were higher in older defendants.

African American male defendants had a significantly higher percentage of male victims than non-African American defendants. They were also more likely to have used a firearm in the offense.

Defendant Characteristics Related to Offense Characteristics and Judicial Outcomes

Logistic regression models were used to explore possible relationships among the sets of variables presented above: demographic and historical factors, clinical characteristics, offense characteristics, and judicial outcomes. Models were first constructed using only demographic and historical variables as predictors of two offense characteristics indicating potentially different types of homicide—multiple victims and use of a firearm. Clinical variables were then added to each model (Table 4). In a next set of models (Table 5), two judicial outcomes—pleading guilty and receiving a guilty verdict—were examined using only demographic and historical variables. Either clinical or offense characteristic variables were then added to the model.

Table 4 indicates that having more than one victim was not associated with demographic and historical factors alone. When clinical factors were added to the model, female gender was associated with having multiple victims, but the overall model was not statistically significant, and none of the clinical factors was significant. Use of a firearm in the offense was associated with lower age and African American race when only demographic and historical factors were included in the model ($p<0.001$). When clinical factors were added to the model, none of the variables individually or as a group were associated with firearm use, but lower age and African American race were ($p<0.001$).

Table 5 indicates that pleading guilty was not associated with any of the variables when only demographic and historical factors were included in the model. When clinical factors were added, having a prior violent offense lowered the odds of pleading guilty, while prior psychiatric treatment was associated with a higher odds of pleading guilty, although the clinical variables as a group and the overall model were not significant. When offense

TABLE 1. Characteristics of Homicide Defendants in a U.S. Urban County, 2001–2005^a

Characteristic	Overall Sample (N=278)		No Axis I Diagnosis (N=131)		Substance Use Disorder Only (N=100)		Comorbid Substance Use and		Non-Substance Use Disorder Only (N=15)		p
							Non-Substance Use Disorders (N=32)				
Demographic and historical characteristics											
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Age (years)	25.77	9.18	25.04	8.04	24.78	9.71	28.72	10.36	32.47	9.16	0.003
	N	%	N	%	N	%	N	%	N	%	
Male	259	93	125	95	95	95	26	81	13	87	0.025
African American	219	79	100	77	88	88	22	69	9	60	0.010
Unmarried or separated	233	94	109	97	87	95	27	90	10	67	0.001
High school equivalency or greater	147	56	69	56	53	54	16	55	9	64	0.912
Some employment	108	41	56	46	33	34	13	42	6	43	0.337
Past arrest	245	90	106	84	98	98	28	88	13	87	0.002
Past violent offense	103	48	48	45	42	56	8	40	5	36	0.309
Prior adult convictions											0.338
None	91	44	51	52	27	36	8	40	5	36	
One	57	27	21	21	24	32	6	30	6	43	
Two or more	61	29	27	27	25	33	6	30	3	21	
Any prison (penitentiary) time	33	16	15	16	11	15	6	22	1	7	0.674
Clinical characteristics											
At least one axis I or II diagnosis	160	58									
At least one axis I diagnosis	147	53									
Adjustment disorder	23	8									
Any axis I non-substance use disorder	47	17									
Affective disorder	35	13					24	75	11	73	
Depressive disorder	25	9					16	50	9	60	
Psychotic disorder	10	4					7	22	3	20	
Anxiety disorder	4	1					2	6	2	13	
Axis I non-substance use disorder only	15	5									
Any substance use disorder	132	47									
Alcohol use disorder	65	23			47	47	18	56			
Drug use disorder	119	43			93	93	26	81			
Cannabis use disorder	90	32			74	74	16	50			
Substance use disorder only	100	36									
Co-occurring substance use and non-substance use disorders	32	12									
Any axis II diagnosis	68	24	13	10	39	39	13	41	3	20	<0.001
At least one personality disorder	64	23	11	8	38	38	12	38	3	20	<0.001
Antisocial personality disorder	14	5	3	2	6	6	3	9	2	13	0.069
Other personality disorder	51	18	8	6	32	32	9	28	2	13	<0.001
Mental retardation or borderline intellectual functioning	6	2	3	2	1	1	1	3	1	7	0.297
Prior psychiatric treatment (excluding drug or alcohol treatment)	99	37	26	21	40	40	23	74	10	71	<0.001
Prior drug or alcohol treatment	62	34	17	20	32	43	8	44	5	56	0.004
Prior hospitalization											<0.001
None	197	80	108	92	70	79	13	48	6	46	
One	26	11	7	6	11	12	6	22	2	15	
Two or more	23	9	2	2	8	9	8	30	5	38	
Prior outpatient treatment	72	28	23	19	25	27	17	65	7	54	<0.001
Outpatient treatment 3 months prior to crime ^b	15	6	5	4	3	4	6	25	1	9	0.005
African American	6	3	3	3	1	1	2	14	0	0	
Non-African American	9	18	2	8	2	20	4	40	1	20	
Offense characteristics											
Use of firearm	183	73	89	76	72	80	16	53	6	40	0.001
More than one victim	22	8	7	5	12	12	2	6	1	7	0.337

continued

TABLE 1. Characteristics of Homicide Defendants in a U.S. Urban County, 2001–2005^a (continued)

Characteristic	Overall Sample (N=278)		No Axis I Diagnosis (N=131)		Substance Use Disorder Only (N=100)		Comorbid Substance Use and Non-Substance Use Disorders (N=32)		Non-Substance Use Disorder Only (N=15)		p
	N	%	N	%	N	%	N	%	N	%	
At least one female victim	59	24	30	26	14	16	8	29	7	47	0.037
Male victim and male defendant	183	73	86	74	73	81	16	57	8	53	0.022
Judicial outcomes											
Went to trial	131	74	56	68	50	81	19	73	6	75	0.428
Trial type											0.598
Bench trial	40	31	16	29	14	28	7	37	3	50	
Jury trial	91	69	40	71	36	72	12	63	3	50	
Pleaded guilty	56	32	28	34	16	26	9	36	3	38	0.639
Verdict											0.016
Guilty	153	84	68	81	57	88	23	88	5	63	
Not guilty	28	15	16	19	8	12	3	12	1	13	
Guilty but mentally ill	2	1	0	0	0	0	2	25			
Maximum sentence											0.019
<20 years	45	31	26	43	11	21	7	30	1	13	
20–40 years	40	28	10	17	19	36	9	39	2	25	
Life	58	40	24	40	23	43	7	30	4	50	
Death penalty	1	1	0	0	0	0	1	13			

^a Percentages are based on available data; for some variables, data were missing for some portion of the subsamples.

^b Significant differences between subgroups were observed for the overall sample ($p=0.001$) and for the group with substance use disorder only ($p=0.036$).

TABLE 2. Prevalences of Psychiatric Diagnoses, by Age Group, in Homicide Defendants in a U.S. Urban County, 2001–2005

Diagnosis	Under Age 18 (N=25)		Ages 18–40 (N=226)		Over Age 40 (N=27)		p
	N	%	N	%	N	%	
Any mental disorder	10	40	129	57	21	78	0.021
Any axis I diagnosis	10	40	118	52	19	70	0.081
Non-substance use disorder	2	8	35	15	10	37	0.015
Mood disorder	2	8	25	11	8	30	0.029
Non-affective psychosis	0		8	4	2	7	0.432
Substance use disorder	10	40	106	47	16	59	0.351
Mental retardation or borderline intellectual functioning	0	0	5	2	1	4	0.715
Any personality disorder	2	8	49	22	13	48	0.002

characteristics were added to demographic and historical factors in the model, neither offense characteristics nor the overall model was significant. Guilty verdicts were not significantly associated with demographic and historical factors. Adding clinical factors did not improve the model, and neither demographic and historical nor clinical factors were associated with a guilty verdict. When offense characteristics were added to demographic and historical factors, neither the offense characteristics as a group nor the demographic/historical and offense characteristics were associated with a guilty verdict.

Discussion

This examination of all homicide defendants in a large U.S. urban jurisdiction over a 5-year period highlights

notable differences from previous work that are likely attributable to sampling. To our knowledge, this is the first study to provide a view of the relationship between psychiatric disorders and homicide in a comprehensive U.S.-based sample unaffected by referral bias. While similar studies have been conducted in Europe, social and cultural differences as well as lower per capita homicide rates limit the applicability of those findings to the United States. A study by Frierson and Finkenbine (17) most closely resembles this study in its aims, but the defendants in that investigation had been referred for assessment because of concerns regarding competency to stand trial or criminal responsibility.

We found a lower overall rate of mental disorders (58%) than Frierson and Finkenbine (91%) (17). The observed lower prevalence of axis I diagnoses in general and of

TABLE 3. Offense Characteristics in Male Homicide Defendants in a U.S. Urban County, 2001–2005

Offense Characteristic	All Male Defendants		African American Male Defendants		Non-African American Male Defendants		p
	N	%	N	%	N	%	
Gender of victim ^a							
Male	183	79	153	85	30	58	<0.001
Female	53	23	30	17	23	44	<0.001
Use of firearm ^b	176	75	161	87	14	29	<0.001

^a Percentages are based on Ns of 232, 180, and 52 for the three groups, respectively.

^b Percentages are based on Ns of 236, 186, and 49 for the three groups, respectively.

TABLE 4. Association of Demographic, Historical, and Clinical Variables With Homicide Involving Multiple Victims and Use of a Firearm in a U.S. Urban County, 2001–2005^a

Variable	Multiple Victims (N=22/275 [8%])				Use of Firearm in Offense (N=183/252 [73%])			
	Model 1 (N=194)		Model 2 (N=165)		Model 1 ^b (N=183)		Model 2 (N=156)	
	Odds Ratio	95% CI	Odds Ratio	95% CI	Odds Ratio	95% CI	Odds Ratio	95% CI
Age	1.01	0.96–1.07	1.01	0.96–1.07	0.92*	0.88–0.96	0.94*	0.89–0.99
Male	0.29	0.08–1.14	0.13*	0.02–0.72	2.35	0.57–9.71	4.85	0.93–25.25
African American	1.51	0.40–5.69	0.73	0.17–3.20	10.12*	4.12–24.83	10.72*	3.90–29.46
High school equivalency or greater	0.67	0.23–1.92	0.39	0.12–1.28	1.27	0.54–3.03	1.72	0.64–4.56
Some employment	1.43	0.50–4.03	2.07	0.63–6.78	0.83	0.37–1.88	0.62	0.25–1.59
Past violent offense	0.95	0.34–2.70	0.93	0.28–3.13	0.76	0.32–1.77	0.77	0.27–2.22
Axis I non-substance use disorder only			2.11	0.25–17.58			0.97	0.18–5.34
Substance use disorder only			2.01	0.57–7.04			2.34	0.74–7.44
Co-occurring substance use and non-substance use disorder			1.11	0.12–10.18			1.17	0.23–6.01
At least one personality disorder			1.10	0.22–5.50			0.56	0.13–2.46
Prior psychiatric treatment (excluding drug or alcohol treatment)			0.35	0.07–1.80			0.51	0.17–1.56
Outpatient treatment 3 months prior to crime			0.73	0.02–26.10			1.44	0.16–12.91

^a The models have different sample sizes because cases had different patterns of missing data on the case characteristics and outcome variables. Likelihood ratio chi-square tests were nonsignificant for both analyses.

^b Wald $\chi^2=44.01$, $p<0.001$.

* $p<0.05$.

psychotic disorders in particular is reasonable, given the unselected nature of our sample. Our observed rate of psychotic disorders (4%) was below the rate of approximately 6.5% observed in some other studies (19, 22). The prevalence rate of mental disorders (58%) in this sample of defendants, however, still greatly exceeded the rate of 25% found in the general population in the United States (23).

We found a higher rate of personality disorders than Frierson and Finkenbine (24% compared with 13%) (17). Personality disorders may not manifest with the same type of overt symptomatology as axis I disorders, and defendants with personality disorders may not be referred for psychiatric assessments as often as those with other diagnoses. The low rate of identified antisocial personality disorder (5%) seen in this study may reflect the lack of a structured personality disorder instrument, and clinicians may be reluctant to assign such a potentially pejorative diagnosis prior to a defendant's court appearance.

Many of the patterns observed in this study align with those seen in previous samples of homicide defendants.

First, males were overrepresented, comprising 93% of the defendants. Second, African American defendants were overrepresented at 79% of the overall sample but only 13% of the local population. Moreover, African American defendants were more likely than non-African American defendants to have used a firearm and to have killed a man rather than a woman. We speculate that these differences reflect higher rates of drug- and gang-related homicides associated with younger African American males in this locale and that jurisdictions with different community characteristics and crime patterns would show different results. Third, the rates of substance dependence or abuse in this study are consistent with those reported in previous studies.

It is notable that clinical variables, such as axis I diagnoses, were not associated with offense characteristics or case outcomes when demographic and historical characteristics of the cases were included in the models. In particular, while age and race were significantly related to the use of a firearm, the addition of clinical variables to demographic and historical variables did not improve

TABLE 5. Association of Demographic, Historical, Clinical, and Offense Variables With Guilty Plea or Guilty Verdict in Homicide in a U.S. Urban County, 2001–2005^a

Variable	Pleaded Guilty (N=56/177 [32%])						Guilty Verdict (N=155/183 [85%])					
	Model 1 (N=124)		Model 2 (N=105)		Model 3 (N=119)		Model 1 (N=131)		Model 2 (N=111)		Model 3 (N=125)	
	Odds Ratio	95% CI	Odds Ratio	95% CI	Odds Ratio	95% CI	Odds Ratio	95% CI	Odds Ratio	95% CI	Odds Ratio	95% CI
Age	1.00	0.95–1.06	1.02	0.96–1.09	0.98	0.92–1.04	1.03	0.96–1.10	1.02	0.94–1.11	1.00	0.92–1.09
Male gender	0.21	0.04–1.01	0.19	0.02–1.92	0.27	0.06–1.24	1.30	0.20–8.56	0.42	0.02–9.20	1.78	0.25–12.60
African American	0.63	0.25–1.62	0.79	0.25–2.48	0.83	0.31–2.27	1.23	0.35–4.27	0.82	0.20–3.41	1.32	0.33–5.35
High school equivalency or greater	1.79	0.75–4.29	1.81	0.68–4.81	2.02	0.82–4.99	1.57	0.57–4.33	1.09	0.37–3.22	2.14	0.72–6.35
Some employment	0.89	0.40–1.96	1.31	0.53–3.23	0.86	0.38–1.92	0.65	0.25–1.71	1.17	0.39–3.53	0.76	0.27–2.16
Past violent offense	0.59	0.27–1.32	0.24*	0.08–0.71	0.50	0.22–1.16	0.73	0.27–1.99	0.48	0.16–1.46	0.68	0.23–1.97
Axis I non-substance use disorder only			0.46	0.06–3.49					0.39	0.05–3.27		
Substance use disorder only			0.78	0.27–2.21					1.73	0.50–5.92		
Co-occurring substance use and non-substance use disorder			0.78	0.16–3.79					0.58	0.11–2.99		
At least one personality disorder			0.46	0.08–2.69					0.66	0.07–6.22		
Prior psychiatric treatment (excluding drug or alcohol treatment)			5.73*	1.61–20.36					2.23	0.47–10.65		
Outpatient treatment 3 months prior to crime			0.53	0.09–3.10					0.33	0.04–2.55		
Use of firearm					0.37	0.12–1.16					0.26	0.05–1.37
More than one victim					0.90	0.19–4.33					1.06	0.22–5.12
At least one female victim					0.78	0.29–2.10					0.41	0.12–1.38

^a The models have different sample sizes because cases had different patterns of missing data on the case characteristics and outcome variables. Wald chi-square tests and likelihood ratio chi-square tests were nonsignificant for all analyses.

* $p < 0.05$.

model fit. Furthermore, a model including demographic/historical and clinical variables did not significantly predict a guilty verdict, suggesting that case-specific factors were more salient in these determinations. Of interest, though, is that agreeing to a guilty plea was positively associated with a past history of mental illness but inversely related to a past history of violent crime. Sentences for defendants with an axis I diagnosis, particularly of a substance use disorder, tended to be longer. These findings raise questions regarding potential biases toward mentally ill individuals in plea offers and sentencing practices.

A higher prevalence of non-substance use axis I disorders and mood disorders in defendants over age 40 in this study warrants further exploration. The patterns noted here could indicate risk factors associated with homicide related to specific clinical issues in older as distinguished from younger persons. If additional studies were to reveal that older defendants had a prior history of treatment and distinctive victim characteristics, this could have implications for more refined risk assessment and preventive treatment interventions.

The rate of previous treatment observed in this sample raises issues relevant to mental health policy. Although

53% of the sample were diagnosed with an axis I diagnosis (including substance use disorders), less than half of these individuals had ever been hospitalized. Also, among those with an axis I diagnosis, only 8% had received any treatment in the 3 months preceding the homicide offense. Moreover, this low frequency of recent psychiatric treatment differed markedly by race; only 3% of African American defendants with at least one axis I diagnosis received treatment in the 3 months preceding the offense, compared with 28% of non-African American defendants. Widespread disparities in access to care and cultural differences regarding help seeking are likely explanations for this difference. The low rate of treatment in the months preceding the offense, however, highlights the need for enhanced engagement of high-risk individuals (especially during times of emotional crisis) if mental health care providers expect to have an impact on serious violence.

A number of limitations of this study should be kept in mind. Although the lack of referral bias and a relatively large sample size were distinct advantages, a lack of highly structured diagnostic assessments and recording of case information introduced unknown biases in the determination of diagnoses. Our impression is that the procedures used identified major psychiatric disorders (e.g., schizophrenia, depression) with sufficient accuracy and substance use disorders at a slightly reduced rate of accuracy. As a result, we have more confidence in results regarding broad diagnostic groups or the presence of a disorder.

Variability in the narrative reports also produced incomplete information on some variables. Although the data in models appear to be missing at random, possible biases in estimates of effects could still exist. In addition, the size of the sample is small for some of the logistic regression models. A larger sample size might have allowed detection of other relevant main effects or interactions. Finally, much of the information and the diagnostic assessment were based on the report of defendants who were interviewed immediately after arrest in a pretrial evaluation, and these reports may have been biased by perceived self-interest. A structured prospective study of these and other factors might produce a different picture.

Studies distinguishing defendants accused of homicides associated with drug or gang activity from other homicides would be helpful in identifying what, if any, clinical factors are related to lethal violence, the targets of such violence, and possible methods of prevention. Clinical factors appear to play a limited role in homicide in general, but their importance in a minority of specific cases has yet to be fully explored in systematic investigations. Clarification of these dynamics would improve our ability to educate courts and juries regarding the potential role of mental illness in homicide.

Presented in part at the annual meetings of the American Academy of Law and Psychiatry in Baltimore, Oct. 26–28, 2009, and in Boston, Oct. 27–30, 2011; and at the Third World Congress of the World

Association of Cultural Psychiatry in London, March 9–11, 2012. Received June 29, 2012; revision received March 18, 2013; accepted April 26, 2013 (doi: 10.1176/appi.ajp.2013.12060858). From the Western Psychiatric Institute and Clinic, University of Pittsburgh School of Medicine, Pittsburgh; the Behavioral Assessment Unit, Allegheny Court of Common Pleas, Pittsburgh; VISN4 Mental Illness Research, Education, and Clinical Center, Veterans Affairs Pittsburgh Healthcare System, Pittsburgh; Hennepin County Medical Center, Minneapolis; and Georgetown University Hospital and Saint Elizabeths Hospital, Washington, D.C. Address correspondence to Dr. Mulvey (mulveyep@upmc.edu).

The authors report no financial relationships with commercial interests.

Dr. Yang was supported by NIMH grant T32 MH16804 and by the U.S. Department of Veterans Affairs, Office of Academic Affiliations, Advanced Fellowship Program in Mental Illness Research and Treatment.

The authors thank Judge Donna Jo McDaniel (president judge of Court of Common Pleas, Allegheny County), Judge Jeffrey Manning (administrative judge of Court of Common Pleas, Criminal Division, Allegheny County), the staff of the Allegheny County Behavior Assessment Unit, and the staff of the Department of Records, Allegheny County, for their assistance and support. They also thank Jonathan Yabes, Ph.D. (from the Center for Research on Health Care Data Center at the University of Pittsburgh School of Medicine) and Barbara Hanusa, Ph.D., for statistical advice and Angela Martone, Molly Delaney, Koraleigh Gritz, and Adam Ligas, M.D., for their coding work.

The views expressed in this article are those of the authors and do not necessarily reflect the views of the Department of Veterans Affairs or the U.S. government.

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