

# Jackson's Indiana: State Hospital Competence Restoration in Indiana

Douglas R. Morris, MD, and George F. Parker, MD

Restoration to competence (RTC) of mentally disordered defendants has become increasingly important for state hospitals. In Indiana, most RTC admissions are sent to one primarily forensic state hospital, but many are admitted to other state hospitals. A state database of defendants admitted for RTC between 1988 and 2005 was analyzed for trends in annual admissions, length of stay (LOS), and success of restoration by hospital and by diagnostic category. Regression models were developed to identify factors associated with RTC success. Analysis of 1,475 RTC admissions showed increased annual admissions over the study period. While the forensic hospital restored a higher percentage of individuals than the other state hospitals, the percentage of RTC success decreased over time in all hospitals. Admission to the forensic hospital, female gender, and mood disorder diagnosis were associated with increased restoration success. Older age and psychotic disorder or mental retardation diagnoses were associated with decreased likelihood of restoration. Race was not significantly associated with RTC at six months, but white defendants were less likely to be restored within one year.

*J Am Acad Psychiatry Law* 36:522–34, 2008

In recent years, state hospital systems across the country have noted an increase in the number of forensic admissions, the proportion of hospital beds devoted to forensic patients, and the proportion of mental health budgets devoted to forensic admissions.<sup>1,2</sup> This trend has been seen in Europe as well.<sup>3</sup> Since the states bear the full burden of the cost of forensic admissions, factors that influence the length of stay of forensic admissions have become increasingly important to the financial health of state mental health authorities. Admissions for restoration to competence (RTC) of defendants found incompetent to stand trial (ICST) comprise a large majority of forensic admissions. In several states, the demand for RTC service recently has exceeded the capacity of the hospital systems to provide this service, resulting in long jail waiting periods and court orders to admit ICST defendants.<sup>4,5</sup> Indiana has also seen both an increase in referrals for RTC and growing concern over jail waiting lists, and these trends have raised both budgetary concerns, due to the cost of state hospitalization, and political and civil rights concerns, due to the long jail waiting periods.

---

Dr. Morris is Volunteer Clinical Assistant Professor of Psychiatry and Dr. Parker is Associate Professor of Clinical Psychiatry, Indiana University School of Medicine, Bloomington, IN. Address correspondence to: Douglas R. Morris, MD, Logansport State Hospital, IRTC 832, 1098 South State Road 25, Logansport, IN 46947. E-mail: drdmo@hotmail.com

Indiana's current competence statute is based on a statutory revision passed in 1974<sup>6</sup> in response to the landmark 1972 U.S. Supreme Court decision in *Jackson v. Indiana*.<sup>7</sup> Theon Jackson was a mentally retarded, deaf, mute man charged with stealing \$9.00 worth of property. Although examining doctors opined that there was little chance that he would ever be competent to stand trial, he was statutorily committed to the Indiana Department of Mental Health until "sane." Jackson's counsel appealed, contending that his commitment under these circumstances amounted to a life sentence without his ever having been convicted of a crime. The U.S. Supreme Court agreed that Indiana could not constitutionally commit Jackson for an indefinite period solely on account of his incompetence to stand trial. The *Jackson* decision further stated that an ICST defendant "cannot be held more than a reasonable period of time necessary to determine if there is a substantial probability that he will attain competency in the foreseeable future" (Ref. 7, p 739). However, the Court left it to the states to define "reasonable period of time" and noted that "in light of differing state facilities and procedures and a lack of evidence in this record, we do not think it appropriate for us to attempt to prescribe arbitrary time limits" (Ref. 7, p 739).

In Indiana, all individuals adjudicated ICST are admitted to Division of Mental Health and Addic-

tion (DMHA) state hospitals for inpatient RTC. Indiana statute requires the superintendent of the state hospital that admits the ICST defendant for RTC to file a report with the criminal court within 90 days of admission regarding the probability of RTC and allows a total of six months for RTC. If an ICST defendant is not restored after six months in DMHA custody, Indiana law requires civil commitment,<sup>8</sup> and it has been DMHA policy to request renewal of the commitment of these unrestored defendants from the probate courts until the charges are dropped or the defendant regains competence to stand trial. Before the *Jackson* decision, ICST defendants in Indiana and across the nation could be, and often were, held indefinitely in state hospitals, often for a longer period than the maximum sentence for the alleged offense committed by the defendant.<sup>9</sup> As an extreme example, before 1960, more ICST defendants left Massachusetts' Bridgewater State Hospital by dying than by all other means combined.<sup>10</sup> Indiana's current system certainly does not rise to that level, but current statute and policy make it possible that ICST defendants will spend many years in the state hospital.

Indiana is not alone with regard to effective implementation of *Jackson*. Although nearly every state made statutory changes in response to the *Jackson* decision, many states still do not follow the spirit of the decision. Roesch and Golding<sup>9</sup> reported that by 1979, only four states had not reviewed their competence laws, but 19 states still allowed automatic and indefinite commitment, and 24 states permitted indefinite commitment of ICST defendants. They noted that eight states, including Indiana, limited commitment for RTC to six months, but also observed that immediate recommitment could occur after completion of the six months. The authors did not note that Indiana in fact required civil commitment if a defendant was not restored to competence within the statutory time period.<sup>6</sup> Morris and Meloy<sup>11</sup> reported that, 20 years after *Jackson*, 13 states still allowed indeterminate commitment until the defendant has been restored to competence, 23 states did not even address the matter of the reasonable period of time for RTC, 8 states failed to provide a specific length of time for RTC but at least mentioned it in their statutes, and only 7 states allowed a finding of permanent incompetence at the time of the initial hearing. They concluded that only 22 states met the criteria laid out in the *Jackson* decision

and that the statutes of 15 states circumvented or resisted the intent of the decision. Thirty years after the *Jackson* decision, Miller found that 18 states required hospitalization after a finding of ICST and 21 states still had no effective time limits on RTC.<sup>12</sup> Thus, based on these reviews of state competence statutes, it appears that the stated goals of the *Jackson* decision have not been fully attained.

Despite the civil rights concerns raised by prolonged forensic admissions and the budgetary impact of prolonged length of stay (LOS) for RTC, surprisingly little research on competence restoration has been published. McGarry<sup>13</sup> was a pioneer in this area and outlined virtually all of the pertinent issues related to RTC in a 1969 law review article, but only a handful of articles followed his lead. Notably, Steadman<sup>14</sup> published a monograph in 1979 on his prospective study of 539 ICST defendants in New York. Grisso and colleagues<sup>15-17</sup> conducted a series of reviews on competence to stand trial. They found 4 studies on RTC between 1986 and 1990, 12 between 1991 and 1995, and only 2 between 1996 and 2000. Pinals<sup>18</sup> did a thorough review of the literature on RTC in 2005 and cited seven studies published after 2001.

The first publications on RTC of ICST defendants were descriptive and had small samples and short study periods. Only a handful reported the percentage that were successfully restored. In 1971, McGarry<sup>10</sup> reported a study of 204 defendants who had been indefinitely committed to Bridgewater State Hospital as ICST as of 1963. After initial evaluation by the research team, 71 (34.8%) were returned to court for trial after a mean LOS of 4.3 years and a median of 2.0 years; those found incompetent upon initial evaluation by the examiners had a mean LOS of 14.9 years. Steadman<sup>14</sup> found that the likelihood of restoration and LOS depended on the nature of the charges. Defendants who were unindicted and had a 90-day commitment at the time of admission had a restoration rate of 33 percent and an average LOS (ALOS) of 22 weeks, whereas those who had been indicted and had a one-year commitment had a restoration rate of 79 percent and an ALOS of 37 weeks. In 1979, Mowbray<sup>19</sup> noted that 88.7 percent of defendants admitted to Michigan state hospitals were restored to competence. Lamb<sup>20</sup> reported that 84 percent of a sample of ICST defendants admitted from Los Angeles courts had been restored, after a median hospital stay of 4.5 months.

Studies on programs designed to restore ICST defendants have also suffered from limitations in size and design, and only a few have reported both the nature of the program and its RTC outcome. Pendleton<sup>21</sup> took the lead in this area when she described the RTC program at Atascadero State Hospital in California. In 1978, this program restored 184 (89.8%) of 205 patients, with an ALOS of 104 days. Siegel and Elwork<sup>22</sup> did one of the only controlled studies on RTC to date, on the effectiveness of a structured, problem-based, psychoeducational group approach to RTC at forensic units in the Philadelphia area, and found that, 45 days after completion of the study, 43 percent of the intervention group had been assessed as RTC by the treatment team, versus 15 percent of the control group. Ladds *et al.*<sup>23</sup> studied the impact of involuntary medication on 46 ICST felony defendants in New York; 87 percent were successfully restored to competence, but no LOS data were reported. Stafford and Wygant<sup>24</sup> reviewed 80 defendants referred from a misdemeanor mental health court to a county-based court clinic and found that 77.5 percent were found ICST and that 47 percent of that group were later restored after an ALOS of 48.9 days in the state hospital.

In a recent small, controlled study, Bertman *et al.*<sup>25</sup> prospectively studied the effectiveness of three treatment programs for RTC: deficit-focused remediation, legal rights education, and standard hospital treatment. Individualized treatment with either deficit-focused remediation or legal rights education resulted in higher scores on post-treatment competency measures than did standard hospital treatment (groups only), indicating that individualized RTC treatment may produce better results. However, it was not clear if the results were the product of the individualized attention or merely the increased total number of sessions those in individualized treatment received. Most recently, Herbel and Stelmach<sup>26</sup> reviewed the use of involuntary medication on 22 ICST defendants with delusional disorder in the federal criminal justice system and determined that 77 percent were successfully restored.

The probability of successful RTC is both clinically and legally pertinent, for the *Jackson* decision required that there be a "substantial probability" of RTC, to justify the involuntary hospitalization typically used for RTC. Despite some early publications on this topic, there have been few articles on factors associated with the success or failure of RTC. The

first study on predicting the outcome of RTC was published in 1984, when Cuneo and Brelje<sup>27</sup> studied the accuracy of clinical predictions about the likelihood of successful restoration of 78 ICST defendants within one year of their admission to the Illinois forensic hospital. They found that 74.4 percent of the subjects were successfully restored and 78 percent of the predictions were accurate, with a sensitivity of 100 percent and a specificity of 15 percent.

Rodenhauser and Khamis,<sup>28</sup> who studied 188 ICST defendants at an Ohio high-security hospital, found that a prior history of incarceration, in the absence of a psychotic disorder, decreased the chance of successful RTC, while refusing medication for more than one week while hospitalized increased the chance of restoration; no other factors had a significant impact on RTC, and the authors did not report either the overall rate of restoration or the rate for any of the subgroups.

Bennett and Kish<sup>29</sup> studied nearly 1,100 male ICST defendants committed for RTC between 1978 and 1984 in Florida and found that the demographic factors of race, education, and marital status did not influence the ALOS, but also did not report rates of restoration. Carbonell *et al.*<sup>30</sup> also reviewed Florida ICST defendants; of 135 admitted between 1984 and 1987, 59.3 percent were restored, but the authors were ultimately unable to find any factors that could reliably predict the success or failure of RTC.

Nicholson and McNulty<sup>31</sup> examined the demographics of nearly 500 ICST Oklahoma defendants and the outcome of attempted RTC for a randomly selected subset of 150 of these defendants. They determined that 95 percent of the subset was successfully restored to competence and identified failure to restore as a low-base-rate problem. The ALOS of the members of the subset who were successfully restored was 63.7 days, versus an ALOS of 234 days for those not restored, and the ALOS for the entire sample was 68.6 days. Less than six percent of the subjects had an LOS greater than six months. Multiple regression analyses showed that the strongest predictor of severity of impairment at discharge was the severity of impairment at admission, but this analysis provided little specific guidance regarding predicting the length of stay for ICST defendants.

Nicholson *et al.*<sup>32</sup> also studied a group of 133 ICST defendants in Florida, using the Computer-Assisted Determination of Competency to Proceed (CADCOMP), an interactive computer-based as-

assessment instrument designed to collect data relevant to competency directly from the defendant, and again found that most (89.5%) were restored, with an ALOS of 283.0 days for those restored and 825.9 days for those not restored. While demographic factors were not predictive of restoration or LOS, severe psychosis at the time of admission, impaired understanding of adversarial proceedings, and a lack of appreciation of appropriate courtroom behavior were associated with longer LOS and a decreased chance of restoration. Aggression after arrest was associated with failure of restoration efforts, and a prior criminal record was associated with a shorter LOS. Overall, studies on RTC have generally found relatively high rates of restoration.

In sum, until recently, there has been little reason for optimism about the identification of clinical or demographic factors that could predict the likelihood of successful RTC or about the ability of forensic examiners to meet the *Jackson* goal of identifying those ICST defendants who have the “substantial probability” of RTC that would justify involuntary hospitalization.

In contrast to these earlier studies, a recently published attempt to predict restorability of incompetent criminal defendants showed cause for optimism about the development of empirical means for predicting competence restoration. Using demographic characteristics, diagnoses, and criminal and psychiatric information commonly available at the time of forensic evaluation, Mossman<sup>33</sup> used logistic regression to create predictive equations to identify the probability of restoration. For all ICST defendants, age at admission, a longer prior state hospital LOS, a diagnosis of mental retardation (MR), having schizophrenia or schizoaffective disorder, non-African-American ethnicity, having a substance use disorder, and misdemeanor charges all decreased the chance of RTC. For felony ICST defendants alone, the same factors were associated with decreased RTC with the exception of ethnicity and substance use losing significance. It is noteworthy that these logistic equations allowed Mossman to identify successfully the subgroups of ICST defendants who were and were not likely to be restored.

We undertook our analysis of the characteristics and outcomes of all ICST defendants committed to the Indiana DMHA for RTC from 1988 to 2005, to take advantage of a large database on RTC and extend what is known about which factors influence

the success or failure of RTC. We also hoped the results would help us gain a better understanding of how to address the challenges currently faced by RTC systems across the country.

## Methods

This research project was reviewed by the Institutional Review Board of the Indiana University School of Medicine and was approved after execution of a data-use agreement between the Indiana DMHA and the Indiana University School of Medicine.

During the study period, most Indiana ICST defendants referred for RTC were admitted to one state hospital, which, since 1979, had all-male-designated forensic units that were higher security than in other state hospital units. Since 1996, this hospital (the forensic hospital) has had an RTC curriculum, organized around legal education themes, on its forensic units. Although the general psychiatry units at the forensic hospital did not use this curriculum, staff had access to and had often worked on the forensic units. Defendants accused of crimes of violence or who had a history of agitation or assault were preferentially admitted to the higher security units at the forensic hospital, as were occasional high-profile ICST defendants. All other ICST defendants were admitted to general psychiatric units. Most were admitted to the forensic hospital, but many were placed in other state hospitals, particularly after 1995, when DMHA underwent a major reorganization. Though RTC admissions were assigned to both forensic and general psychiatric units at the forensic hospital, individual admissions could not be distinguished by unit, as the DMHA database did not consistently record the specific unit to which an individual was admitted. ICST individuals admitted to other state hospitals for RTC were admitted to general psychiatry units and were not concentrated in any one unit. Treatment in these hospitals was not restoration-specific and depended on any relevant skills or training that the staff on these units happened to have had.

Before 2005, Indiana statute required that defendants adjudicated ICST be committed to DMHA for inpatient RTC.<sup>34</sup> DMHA maintained a separate computer database of all state hospital forensic admissions from 1988 to early 2006. We examined all admissions for RTC in this database from 1988 to 2005 and recorded each defendant’s age at admis-

sion, sex, and race, as well as the admitting or referring diagnosis and the admission hospital, and calculated the length of hospitalization. We sorted the resulting database by year of admission, psychiatric diagnosis, and admission hospital and then calculated restoration rates and the LOS for multiple groups.

Psychiatric diagnoses were classified according to the admission and/or referral diagnoses in the database. We combined relevant psychiatric diagnoses into the following categories: psychotic disorders (schizophrenia, schizoaffective disorder, schizophreniform disorder, delusional disorder, and psychotic disorder not otherwise specified [NOS]); mood disorders (major depressive disorder, bipolar I and II disorders, and mood disorder NOS); mental retardation; both mental retardation and mental illness (either a psychotic or a mood disorder and mental retardation); and other disorders (no diagnosed psychotic disorder, mood disorder, or mental retardation). Individuals with diagnosed psychiatric disorders from more than one category were noted in each applicable category. All individuals with mental retardation (MR) diagnoses were placed in the mental retardation category. This group was further divided into subcategories of defendants with MR only and those with both mental retardation and mental illness (MR/MI). Individuals with either a V code diagnosis or having no documented admission or referral diagnosis were included in the other disorders category.

Successful restoration to competence was calculated using two methods: whether an individual admitted for RTC was discharged within six months of the admission date (the Indiana statutory standard) or within one year (the time period used in several states and prior publications). The percentage of ICST defendants successfully restored to competence was calculated for defendants admitted from 1988 to 2004. Admissions from 2005 were excluded from this analysis, as these persons would have been hospitalized for less than one year by the end of our study period.

Tests of proportions were used to evaluate differences observed in the demographic data, distribution of diagnoses, and restoration success rates between the forensic and other hospitals, using  $p < .05$  as the cutoff for significance. Six-month and one-year restoration rates were calculated for the entire RTC population by admission hospital and by diagnostic

category. Tests of proportions for the five-year periods at the start and end of the study period (1988–1992 and 2001–2005) were used to compare trends in admission diagnosis and demographic factors over the course of the study. The  $t$  test, with  $p < .05$  as the cutoff for significance, was used to compare trends in age at admission during the five-year periods at the beginning and end of the study period for the admission facilities and the total sample.

Univariate models were used to screen for the significance of age, sex, facility, and diagnosis as independent measures affecting restoration success at six months and one year. Using the univariate results, we created a multiple logistic regression model, using a backward selection process to evaluate the effects of the above measures when holding all other measures constant. We set the rule for removal from the model to be  $p > .20$ .

## Results

From 1988 to 2005, Indiana had 1,475 admissions to its state hospitals for RTC; 1,065 (72.2%) were sent to the forensic hospital and 410 (27.8%) to other state hospitals (Table 1). Over the course of the study period, the total number of RTC admissions increased by over 60 percent, from an average of 59.8 per year from 1988 to 1992 to an average of 96.0 per year from 2001 to 2005. Annual admissions to the forensic hospital increased by nearly one-third over the study period, from 49.6 per year from 1988 to 1992, to 65.6 from 2001 to 2005, while admissions to the other hospitals nearly tripled, from 10.2 to 30.4 per year (Table 2).

### Demographics of the Study Population

For details of the demographics of the study population, see Tables 1 and 2. The average age at admission of all defendants admitted for RTC was 36.6 years. Over the course of the study, the average age increased, from 35.2 years for 1988 to 1992 to 37.4 years for 2001 to 2005 ( $p < .05$ ). The average age of defendants admitted to the forensic hospital changed little over the course of the study (35.8–36.1 years), while the mean age of the admissions to the other hospitals increased significantly, from 31.9 to 40.0 years ( $p < .001$ ). At the beginning of the study, ICST defendants admitted to the forensic hospital were significantly older than those admitted to the other hospitals, but by the end of the study, forensic hos-

**Table 1** Demographics of the Study Population (1988–2005)

Category	Total		Forensic Hospital		Other Hospitals		P*
	n	Data	n	Data	n	Data	
Age at admission	1,475	36.6 y	1,065	36.1 y	410	38.2 y	<.05
Sex							
Male	1,293	87.7%	970	91.1%	323	78.8%	<.0001
Female	182	12.3%	95	8.9%	87	21.2%	<.0001
Race							
White	851	57.7%	575	54.0%	276	67.3%	<.0001
Black	581	39.4%	454	42.6%	127	31.0%	<.0001
Other	43	2.9%	36	3.4%	7	1.7%	.08
Diagnosis							
Psychotic disorder	988	67.0%	732	68.7%	256	62.4%	.02
Mood disorder	201	13.6%	142	13.3%	59	14.4%	.6
Mental Retardation only	111	7.5%	71	6.7%	40	9.8%	.6
MR and MI	63	4.3%	40	3.8%	23	5.6%	.1
Other disorders	241	16.3%	161	15.1%	80	19.5%	.04

Percentages may total >100% as individuals could be placed in multiple categories.

\*Forensic hospital versus other hospitals.

pital admissions were significantly younger than those admitted to the other hospitals.

A large proportion of the RTC admissions were male (1,293; 87.7%). Over the course of the study, a significantly larger proportion of admissions to the forensic hospital were male (91.1%), compared with the admissions to other hospitals (78.8%,  $p < .0001$ ). Significantly more males were admitted to the forensic hospital than to the other hospitals early in the study, but this difference lost significance by the end of the study, as the proportion of males ad-

mitted to the other hospitals increased significantly by the end of the study.

Overall, 851 (57.7%) of the RTC admissions were white, 581 (39.4%) were black, and 43 (2.9%) were of other races. Over the course of the study, significantly more black defendants were admitted to the forensic hospital, and significantly more white defendants were admitted to the other hospitals. The overall proportion of white admissions decreased modestly over the course of the study, from 62.2 percent early in the study to 56.7 percent at the end of the

**Table 2** Changes in Demographics and Diagnoses over the Study Period

	Annual Admissions	Mean Age at Admission	Demographic Data					Prevalence of Diagnosis				
			Male	Female	White	Black	Other Race	Psychotic Disorder	Mood Disorder	MR Only	MR and MI	Other Disorder
Forensic hospital												
1988–1992	49.6	35.8*	92.3%†	7.7%†	59.7%*	39.1%	1.2%	57.7%	10.9%	6.1%‡	2.4%*	25.8%
2001–2005	65.6	36.1§	89.3%	10.7%	53.7%	44.2%	2.1%	78.1%¶	19.8%#	5.2%	4.9%	6.4%  ¶
Other state hospitals												
1988–1992	10.2	31.9**	68.6%	31.4%	74.5%	25.5%	0.0%	43.1%	9.8%	19.6%	9.8%	29.4%
2001–2005	30.4	40.0	84.2%††	15.8%††	63.2%	34.2%	2.6%	75.0%¶	19.1%	5.9%#	5.3%	11.8%#
All hospitals												
1988–1992	59.8	35.2‡‡	88.3%	11.7%	62.2%	36.8%	1.0%	55.8%	9.0%	8.4%	3.7%	26.4%
2001–2005	96.0	37.4	87.7%	12.3%	56.7%	41.0%	2.3%	77.1%¶	19.6%¶	5.4%	5.0%	8.1%¶

\* $p < .05$  versus other hospitals, 1988–1992.

† $p < .0001$  versus other hospitals, 1988–1992.

‡ $p < .01$  versus other hospitals, 1988–1992.

§ $p < .01$  versus other hospitals, 2001–2005.

|| $p < .05$  versus other hospitals, 2001–2005.

¶ $p < .0001$  versus 1988–1992.

# $p < .01$  versus 1988–1992.

\*\* $p < .001$  versus 2001–2005.

†† $p < .05$  versus 1988–1992.

‡‡ $p < .05$  versus all hospitals, 2001–2005.

study, while the proportion of black admissions increased modestly, from 36.8 percent to 41.0 percent, as did the proportion of admissions of other races (from 1.0% to 2.3%). Early in the study, significantly more white defendants were admitted to the other hospitals than to the forensic hospital (74.5% versus 59.7%,  $p < .05$ ), but this difference was no longer significant by the end of the study. Although the difference was not significant early in the study, significantly more black defendants were admitted to the forensic hospital than to the other hospitals at the end of the study (44.2% vs. 34.2%,  $p < .05$ ).

Over the course of the study, two-thirds of the patients admitted for RTC received a diagnosis of a psychotic disorder (988; 67.0%); the remainder of the admission diagnoses were distributed fairly evenly among other disorders (241; 16.3%), mood disorders (201; 13.6%) and mental retardation (174; 11.8%). Of those with mental retardation, 111 (7.5%) individuals had a sole diagnosis of mental retardation, and 63 (4.3%) carried diagnoses of both mental retardation and mental illness (Table 1). The prevalence of psychotic disorders increased among all RTC admissions over the course of the study, from 55.8 percent from 1988 to 1992, to 77.1 percent from 2001 to 2005 ( $p < .0001$ ), as did the prevalence of mood disorders (from 9.0% to 19.6%,  $p < .0001$ ). The prevalence of other disorders declined substantially, from 26.4 percent to 8.1 percent ( $p < .0001$ ). The prevalence of MR alone decreased (from 8.4% to 5.4%), but the prevalence of MR and MI increased (from 3.7% to 5.0%); neither trend reached statistical significance (Table 2).

Significantly more ICST defendants with psychotic disorders (68.7% versus 62.4%,  $p = .02$ ) and significantly fewer with other disorders (15.1% versus 19.5%,  $p = .04$ ) were admitted to the forensic hospital than to the other hospitals over the course of the study (Table 1). The prevalence of psychotic disorders among ICST defendants increased dramatically over the course of the study; at the forensic hospital, the proportion increased from 57.7 percent to 78.1 percent ( $p < .0001$ ), and at the other hospitals it increased from 43.1 percent to 75.0 percent ( $p < .0001$ ). At the beginning of the study period, the other state hospitals admitted a higher proportion of defendants with MR alone (19.6% versus 6.1%,  $p < .01$ ) and with MR and MI (9.8% versus 2.4%,  $p < .05$ ) than did the forensic hospital, but by the end of the study, the prevalence of these diagnoses declined to levels similar to the forensic hospital.

In particular, the proportion of defendants with MR alone declined significantly at the other hospitals, from 19.6 percent to 5.9 percent ( $p < .01$ ). The proportions of defendants admitted with other disorders showed a significant decrease during the study period, in both the forensic hospital and the other hospitals.

### Rates of Restoration to Competence

For all defendants admitted to an Indiana state hospital for RTC from 1988 to 2004, 72.3 percent were restored to competence within six months of admission and 83.9 percent were restored within one year of admission (Table 3). Over the entire study period, the forensic hospital was more successful at RTC than the other hospitals, as it restored 74.6 percent of defendants within six months, compared with 66.6 percent at the other hospitals ( $p < .01$ ), and 86.4 percent of defendants within one year, compared with 77.6 percent at the other hospitals ( $p < .0001$ ). In both the early and later years of the study period, the forensic hospital performed better at RTC than the other state hospitals, but these differences did not reach statistical significance (Table 3).

Over the course of the study, restoration rates declined at the forensic hospital and at the other state hospitals. The decline in the six-month and one-year restoration rates was significant for the forensic hospital (from 82.2% to 68.3%,  $p < .001$ , and from 92.7% to 82.5%,  $p < .001$ , respectively) and for the total sample (from 80.6% to 67.8%,  $p < .0001$ , and from 91.6% to 81.6%,  $p < .0001$ , respectively). The decline in restoration success did not reach significance at the other state hospitals (Table 3).

When we studied the rate of restoration by diagnostic category, defendants with a mood disorder were most likely to be restored (81.7% at six months, 92.6% at one year) and were significantly more likely to be restored than were those with psychotic disorders ( $p < .05$ ; see Table 4). Defendants with MR alone and MR/MI were significantly less likely to be restored than were defendants with psychotic disorders, mood disorders, or other disorders at both six months and one year. In addition, defendants with MR/MI were significantly less likely to be restored than were defendants with MR alone at one year (60.0% versus 75.9%,  $p < .05$ ).

### Regression Analyses

The results of univariate analyses of the effects of age, sex, admitting hospital, and diagnosis for resto-

**Table 3** Total (1988–2004) and Five-year Mean Restoration Rates by Hospital (1988–1992 versus 2000–2004)

	Admissions ( <i>n</i> )	Six-Month RTC		One-Year RTC	
		<i>n</i>	% RTC	<i>n</i>	% RTC
Forensic Hospital					
1988–2004	991	739	74.6%*	856	86.4%†
1988–1992	248	204	82.2%‡	230	92.7%‡
2000–2004	315	215	68.3%	260	82.5%
Other state hospitals					
1988–2004	389	259	66.6%	302	77.6%
1988–1992	51	40	78.4%	44	86.3%
2000–2004	164	110	67.1%	126	76.8%
All hospitals					
1988–2004	1380	998	72.3%	1158	83.9%
1988–1992	299	244	81.6%§	274	91.6%§
2000–2004	479	325	67.8%	386	80.6%

\**p* < .01 versus other state hospitals, 1988–2004.

†*p* < .0001 versus other state hospitals, 1988–2004.

‡*p* < .001 versus forensic hospital, 2000–2004.

§*p* < .0001 versus all hospitals, 2000–2004.

ration success at six months and one year showed that at six months, all variables except race showed statistical significance for either positive or negative effects on restoration success. Females, individuals with affective disorders, and individuals admitted to the forensic hospital were more likely to be restored (*p* < .01). Older individuals, and individuals with a psychotic disorder, MR alone, or both MR and MI were significantly less likely to be restored. At one year, these trends remained statistically significant with the exceptions of white race demonstrating a significant negative effect on restoration and a diagnosis of psychotic disorder losing the significance of its negative effects.

The results of multiple logistic regression analysis of each individual variable's effect on restoration success at six months and one year are reported in Table

5. Holding constant all other variables, female gender, admission to the forensic hospital and a diagnosis of a mood disorder showed significant positive effects on restoration at both six months and one year. Older age and diagnoses of a psychotic disorder or MR were associated with significant negative effects on restoration at six months and one year. White race was associated with decreased restoration success at one year only. Diagnosis of both MR and MI was a significant negative predictor of restoration success at six months (.62; *p* < .001) and one year (.51; *p* < .01) in the univariate analysis, but fell out of significance in the logistic regression model. The estimated log odds of the effect of age on restoration success (not reported in the tables) is a continuous function based on the effect of each year of increasing age.

**Table 4** Six-Month and One-Year Restoration Rates by Diagnosis (1988–2004)

Diagnosis	<i>N</i>	Six-Month RTC	One-Year RTC
Psychotic disorder	922	72.8%	83.8%
Mood disorder	175	81.7%*	92.6%*
MR only	108	61.1%†	75.9%‡
MR and MI	60	50.0%§	60.0%
Other disorders	230	76.1%	87.4%

\**p* < .05 versus psychotic disorders.

†*p* < .05 versus psychotic disorders, mood disorders and other disorders.

‡*p* < .05 versus all other diagnostic categories.

§*p* < .001 versus psychotic disorders, mood disorders and other disorders.

||*p* < .0001 versus psychotic disorders, mood disorders and other disorders; *p* < .05 versus MR only.

## Discussion

Our analysis of 18 years of data on RTC in Indiana state hospitals, covering 1,475 ICST defendants, found that nearly three of every four defendants admitted for RTC were successfully restored within six months, and nearly 85 percent within one year. Statistical analysis showed that admission to the forensic hospital, female gender, and having a diagnosis of a mood disorder significantly increased the chances of restoration, while older age, the presence of mental retardation, and diagnosis with a psychotic disorder significantly decreased the chance of restoration.

## State Hospital Competence Restoration

**Table 5** Multiple Regression Model for Factors Affecting Rate of Competence Restoration

Variable	Status Modeled	Restoration Within Six Months		Restoration Within One Year	
		Estimated Log Odds Exp (Estimate)*	<i>p</i>	Estimated Log Odds Exp (Estimate)*	<i>p</i>
Age at admission			<.01		<.01
Sex	Female	1.44	<.01	1.67	<.01
Admitting hospital	Forensic	1.24	<.01	1.39	<.01
Psychotic disorder	Disorder present	.77	<.01	.72	<.01
Mood disorder	Disorder present	1.24	.04	1.49	.01
Mental retardation	Disorder present	.60	<.01	.51	.01
Race	White		NS	.63	<.01

\*The estimated log odds provides the odds of an individual with a given demographic factor or diagnosis being successfully restored within six months or one year. NS, not significant.

A major strength of this study is the number of admissions for RTC, which allowed the statistical identification of factors that increased and decreased the chances of restoration. In addition, the Indiana ICST statute did not change over the course of the study nor did the nature of the state hospital system in Indiana change appreciably. The forensic hospital has served high-risk forensic patients since 1979 and thus had significant forensic experience at the start of the study period, in 1988. To a certain extent, the defendants admitted to the other state hospitals acted as a control population for the purposes of assessing the effectiveness of the forensic hospital's RTC efforts; as noted, controlled studies of RTC are exceedingly rare.

A potential weakness of the study is our reliance on the admission and referral diagnoses as entered into the DMHA database, as we have no knowledge of the diagnostic criteria used to make these diagnoses. This lack of criteria may be particularly important in the diagnosis of mental retardation, as clinicians are prone to make a diagnosis of MR without verifying the cognitive deficits with objective testing or without determining that the cognitive deficits began in childhood. In addition, we did not have access to the competence evaluations of the defendants admitted for RTC and thus do not know if the defendants were truly ICST. Although the situation has improved in recent years, in years past, clinicians sometimes equated serious mental illness with incompetence and did not formally assess matters pertinent to competence to stand trial in the reports they submitted to the courts.<sup>9,13</sup> Our study did not have a true control population, although, as noted, the ICST defendants admitted to the other state hospitals functioned as one in many respects. We were not able to

study the effect of the severity of the charge on the outcome of RTC, as the data were not consistently recorded in the DMHA database. It has been well established that defendants with misdemeanors have both a higher likelihood of being found ICST and a lower chance of RTC, due to either legal limitations on the LOS allowed for RTC, or the higher threshold for requesting competence evaluations for misdemeanor offenses, or both.<sup>9,33,35</sup>

Many of our findings regarding factors that might predict the success or failure of RTC are consistent with prior research findings. In particular, the challenges of RTC for individuals with psychotic disorders, including the ultimate need for involuntary medication, has been noted several times.<sup>23,26</sup> Our results indicate both that the proportion of individuals with psychotic disorders substantially increased during the study period and that individuals with a diagnosed psychotic disorder were significantly less likely to be restored to competence. This combination of findings could help to explain why restoration rates decreased during the study period at both the forensic and other state hospitals.

Although treatment with antipsychotic medication has freed millions of people with chronic psychotic disorders from much of the torment and disability caused by their symptoms, currently available medications are far from perfect, and partial responses to treatment are often encountered in clinical practice. Since the level of organization required for competence to stand trial is relatively low, defendants with schizophrenia who are found ICST are generally rather ill. They often have had their illness for several years and usually have been off medication for months—all of which makes response to treatment with medication less likely, even over the

course of several months in the hospital. As Mossman<sup>33</sup> recently reported, the chance of RTC declined with a diagnosis of schizophrenia and with a long history of treatment in state hospitals.

We also found that mental retardation significantly decreased a defendant's chances of RTC, which is consistent with several prior reports. In general, a relatively small proportion of ICST defendants are mentally retarded, but these individuals are disproportionately represented among unrestorable defendants.<sup>36</sup> Despite attempts to implement specific programs to aid mentally retarded defendants in RTC, previous studies have yielded success rates of 50 percent or less with this population,<sup>37-39</sup> and state hospitals have performed better than rehabilitation facilities in restoring individuals with MR.<sup>38</sup> In our study, individuals with a MR diagnosis fared notably more poorly than did defendants with mental illness alone with respect to restoration success. Based on the results of our regression analyses, when all other factors were held constant, having a diagnosis of MR (including individuals with MR alone and MR/MI) reduced the odds of restoration to .60 at six months and .51 at one year. Individuals with diagnoses of both MR and MI showed even lower restoration rates when this was evaluated as an independent variable, consistent with the findings of a study on RTC of ICST juveniles.<sup>40</sup> However, these odds lost significance in our regression model when all other variables were held constant, probably because both the relatively small number ( $n = 63$ ) of MR/MI individuals in our study and the structure of our regression model, which corrected for psychotic disorders, mood disorders, and MR (i.e., the very variables we used to create the category of MR/MI). We were not able to determine from this database whether any particular approach to RTC for MR defendants increased the chances of successful restoration. Such a finding will have to await a more detailed review of the hospital records of these defendants.

The diagnosis of a mood disorder was found to increase the chances of RTC. Although there is little prior research on restoration success in those with mood disorders, successful restoration of ICST defendants with a mood disorder would be expected, given the episodic nature of most primary mood disorders and the availability of a variety of effective treatments for them. Defendants found ICST due to a mood disorder are generally diagnosed with bipolar disorder; we found that only 2 percent ( $n = 29$ ) of

individuals in our sample were diagnosed with major depressive disorder. Both mania and depression may cause symptoms of psychosis, including delusional thinking and a disorganized thought process, though mania is more likely to be associated with arrest than depression, given the impulsivity, poor judgment, and high energy level seen in manic episodes. Both mania and depression have a history of better response to treatment with medication than the chronic psychotic disorders, and they tend to be self-limited in duration. All of these factors make it likely that defendants found ICST due to mood disorders can be restored to competence in a state hospital.

Women are generally a small percentage of any group of ICST defendants<sup>31,33</sup> and composed only 12.3 percent of defendants in our sample. Our findings appear to be the first to show sex-based differences in restoration success, likely made possible by our large sample size. Further examination of the reasons for this difference will require additional analysis and review. White defendants showed significantly decreased odds of restoration at one year, but not at six months. While the explanation for this finding is unclear, this trend is consistent with Mossman's recent findings that non-African-American ethnicity was associated with a decreased likelihood of RTC.<sup>33</sup>

Admission to the forensic hospital was also found to be a predictor of successful RTC. There are several possible explanations for the better performance of the forensic hospital compared with the other Indiana state hospitals. First, it is now well known in the field of medicine that outcomes improve with increased frequency. This fact has been demonstrated most convincingly in cardiac surgery.<sup>41</sup> The forensic hospital has a long history of providing RTC services to forensic patients, and ICST defendants were preferentially admitted to this hospital throughout the course of this study. Thus, it is likely that the forensic hospital developed better skills at RTC than did the other hospitals simply because they were asked to restore defendants more frequently than were the other hospitals. Second, since most of the patients on the higher security units in the forensic hospital are ICST, the staff of this unit developed an RTC curriculum in 1996. As discussed in the introduction, the use of such a program may improve the chances of successful RTC and reduce LOS. No other Indiana state hospital developed or adopted an RTC program, and this curriculum was not used on the gen-

eral psychiatry units of the forensic hospital. However, since staff often change unit assignments, it is likely that staff on the forensic hospital's general units had more experience at RTC than staff at other state hospitals. This possible explanation for the better performance of the forensic hospital is essentially a corollary to the first explanation, as the development of the RTC curriculum was directly related to the high volume of RTC at the higher security units of the forensic hospital. Third, a large proportion of defendants admitted to the forensic hospital for RTC were admitted to the higher security units, which have higher staffing levels than the general psychiatry units. It is possible that the additional staff gave the higher security units an advantage in achieving RTC. However, the higher staffing on these units is largely at the level of mental health technicians, to ensure adequate security. The staffing levels of psychiatrists and psychologists for these units do not differ significantly from those on the general psychiatry units. It is unlikely that additional mental health technician staffing led to better RTC outcomes, given their typical role on inpatient psychiatry units.

Overall, it is the authors' belief that the improved performance at RTC by the forensic hospital was due to the frequency with which this hospital was asked to attempt RTC, which was likely aided by the development of restoration-specific programming. It is important to note that while the rate of restoration over the course of the study favored the forensic hospital, for the last five years of the study the other state hospitals had essentially the same rate of RTC at six months (67.1%) as the forensic hospital (68.3%). During this five-year period, the number and proportion of RTC admissions to the other state hospitals increased substantially, from a total of 51 (17.1% of all RTC admissions) for the first five years of the study to 164 (34.2%) for the last five years. The performance of the other state hospitals and the forensic hospital thus converged as the other hospitals received more RTC admissions. As noted, the forensic hospital did receive the more violent and presumably more difficult to manage<sup>32</sup> defendants throughout the course of the study, and so it is possible that the advantages conferred by their expertise in RTC and the use of an RTC curriculum were offset by the type of defendants sent to the forensic hospital.

A surprising outcome of our analysis of this longitudinal database was the decline in the rate of RTC over the course of the study, particularly at the foren-

sic hospital. Without a detailed review of the charts of the hundreds of ICST defendants referred to this hospital for RTC, it is impossible to state with certainty why this occurred. While the extent of the DMHA database is clearly one of its strengths, it may also be a weakness, as the practice of forensic psychiatry and the expertise of Indiana criminal courts may have changed significantly over the course of the 18 years encompassed by the database. Support for this explanation comes from the change in distribution of diagnoses over the course of the study, particularly the significant decline in the proportion of other disorders, from 26.4 percent to 8.1 percent, paralleled by an increase in diagnoses of psychotic and mood disorders. The category of other disorders was reserved for those defendants who were admitted without a diagnosis of a primary psychotic disorder, mood disorder or mental retardation. It is difficult to conceive of many diagnoses that would account for a defendant's being ICST that are not covered by these categories, which suggests that up to one-quarter of all RTC admissions in the first five years of the study may not have had a major mental disorder. This suggests that the reasons for a finding of ICST were not as rigorous at the beginning of the study as they were toward the end of the study. Since those defendants diagnosed with other disorders had the highest rate of RTC over the course of the study, a decline in the referral of such defendants, accompanied by an increase in the referral of defendants with psychotic disorders, could very well account for the apparent decline in the performance of the hospitals in RTC over the course of the study.

Beyond the statistical analysis of restoration rates and the factors that influence the likelihood of restoration lies a large policy and civil rights concern. Competence to stand trial is a fundamental right of all criminal defendants and dates back to the early years of formal criminal court proceedings; as Blackstone noted:

If a man in his sound memory commits a capital offense, and before arraignment for it, he becomes mad, he ought not to be arraigned for it; because he is not able to plead to it with that advice and caution that he ought. And if, after he has pleaded, the prisoner becomes mad, he shall not be tried; for how can he make his defense? [Ref. 42, p 2181].

Restoration to competence became a real possibility in the 20th century, with the availability of effective treatments for serious psychiatric disorders. With these developments came the responsibility to restore defendants in a timely fashion, as enunciated in *Jack-*

*son v. Indiana*. We found that up to one in four ICST defendants admitted for RTC was not restored after six months in a state hospital. Indiana statute requires that ICST defendants not restored after six months be civilly committed, and DMHA requires the hospitals to request ongoing commitment of these defendants until they attain competence or their charges are dropped. This approach to defendants that are essentially unrestorable does not appear to be one that the *Jackson* court would have approved. While it is obviously important to protect public safety by ensuring that people with a mental disorder who have been accused of a crime are appropriately supervised and monitored, the civil rights of unrestored defendants still appears to be an active concern more than 35 years after the Supreme Court held that, "At the least, due process requires that the nature and duration of commitment bear some reasonable relation to the purpose for which the individual is committed" (Ref. 7, p 739).

The results of our analysis of 18 years of RTC in Indiana show that there is benefit to designating one hospital for RTC, as we believe our results demonstrate that the success of RTC is linked to the frequency of attempted RTC and restoration-specific treatment efforts. Because our data are drawn from a large, aggregated database that covers 18 years of admissions, we could not show which elements of RTC were more effective than others, or what worked best for specific populations of ICST defendants. We have added to prior work showing that some populations of defendants have a better chance of restoration than others. This information should allow forensic evaluators to answer questions more accurately and confidently about the likelihood of restoration of a particular defendant. The next challenge will be to take this information and develop RTC programs specifically designed to meet the needs of ICST defendants at high risk of failed RTC. When such programs are developed, staff should collect demographic and outcome data and then publish their findings, to assist state systems across the country as they work to address the clinical, fiscal, and civil rights concerns raised by unrestored defendants.

### Acknowledgments

The authors thank the Indiana DMHA for use of the forensic database; Tom Smith, PhD, for the maintenance of DMHA's forensic databases; and Adrian R. Katschke, MS, for aid with the statistical analysis of the data.

### References

1. NASMHPD Medical Directors Council: 2002 Best Practices Symposium
2. NASMHPD Research Institute: State Forensic Mental Health Services, 2001 and 2004 Reports
3. Priebe S, Badesconyi A, Fioretti A, *et al*: Reinstitutionalization in mental health care: comparison of data on service provision from six European countries. *BMJ* 330:123–6, 2005
4. Adams RW: Public defenders gearing up to help mentally ill inmates. *The Ledger*. December 9, 2006, p A1
5. Ball A: Mentally ill in jail too long, lawsuit charges. *Austin American-Statesman*. February 15, 2007, p B01
6. Act of Feb. 18, 1974, Pub. Law No. 148, §§ 3 and 4
7. *Jackson v. Indiana*, 406 U.S. 715 (1972)
8. Ind. Code § 35-36-3-4 (1981)
9. Roesch R, Golding SL: *Competency to Stand Trial*. Urbana, IL: University of Illinois Press, 1980
10. McGarry AL: The fate of psychotic offenders returned for trial. *Am J Psychiatry* 127:1181–4, 1971
11. Morris GH, Meloy JR: Out of mind? Out of sight: the uncivil commitment of permanently incompetent criminal defendants. *Univ Calif Davis Law Rev* 27:1–96, 1993
12. Miller RD: Hospitalization of criminal defendants for evaluation of competence to stand trial or for restoration of competence: clinical and legal issues. *Behav Sci Law* 21:369–91, 2003
13. McGarry AL: Restoration and research in competency for trial and mental illness: review and preview. *Boston Univ Law Rev* 49:46–61, 1969
14. Steadman HJ: *Beating A Rap? Defendants Found Incompetent to Stand Trial*. Chicago: University of Chicago Press, 1979
15. Grisso T: Five-year research update (1986–1990): evaluations for competence to stand trial (adjudicative competence). *Behav Sci Law* 10:353–69, 1992
16. Cooper DK, Grisso T: Five year research update (1991–1995): evaluations for competence to stand trial (adjudicative competence). *Behav Sci Law* 15:347–64, 1997
17. Mumley DL, Tillbrook CE, Grisso T: Five year research update (1996–2000): evaluations for competence to stand trial (adjudicative competence). *Behav Sci Law* 21:329–50, 2003
18. Pinals D: Where two roads meet: restoration of competence to stand trial from a clinical perspective. *N Engl J Crim Civ Confin* 31:81–108, 2005
19. Mowbray CT: A study of patients treated as incompetent to stand trial. *Soc Psychiatry* 14:31–9, 1979
20. Lamb HR: Incompetency to stand trial. *Arch Gen Psychiatry* 44:754–8, 1987
21. Pendleton L: Treatment of persons found incompetent to stand trial. *Am J Psychiatry* 137:1098–1100, 1980
22. Siegel AM, Elwork A: Treating incompetence to stand trial. *Law Hum Behav* 14:57–65, 1990
23. Ladds B, Convit A, Zito J, *et al*: Involuntary medication of patients who are incompetent to stand trial: A descriptive study of the New York experience with judicial review. *Bull Am Acad Psychiatry Law* 21:529–45, 1993
24. Stafford KP, Wygant DB: The role of competency to stand trial in mental health courts. *Behav Sci Law* 23:245–58, 2005
25. Bertman LJ, Thompson JW, Waters WF, *et al*: Effect of an individualized treatment protocol on restoration of competency in pretrial forensic inpatients. *J Am Acad Psychiatry Law* 31:27–35, 2003
26. Herbel BL, Stelmach H: Involuntary medication treatment for competency restoration of 22 defendants with delusional disorder. *J Am Acad Psychiatry Law* 35:47–59, 2007

## State Hospital Competence Restoration

27. Cuneo DJ, Brelje TB: Predicting probability of attaining fitness to stand trial. *Psychol Rep* 55:35–9, 1984
28. Rodenhauser P, Khamis HJ: Predictors of improvement in maximum security forensic hospital patients. *Behav Sci Law* 6:531–42, 1988
29. Bennett GT, Kish GR: Incompetency to stand trial: treatment unaffected by demographic variables. *J Forensic Sci* 35:403–12, 1990
30. Carbonell JL, Heilbrun K, Friedman FL: Predicting who will regain trial competency: initial promise unfulfilled. *Forensic Rep* 5:67–76, 1992
31. Nicholson RA, McNulty JL: Outcome of hospitalization for defendants found incompetent to stand trial. *Behav Sci Law* 10: 371–83, 1992
32. Nicholson RA, Barnard GW, Robbins L, *et al*: Predicting treatment outcome for incompetent defendants. *Bull Am Acad Psychiatry Law* 22:367–77, 1994
33. Mossman D: Predicting restorability of incompetent criminal defendants. *J Am Acad Psychiatry Law* 35:34–43, 2007
34. Ind. Code § 35-35-3-1 (1981)
35. Bittman BJ, Convit A: Competency, civil commitment, and the dangerousness of the mentally ill. *J Forensic Sci* 38:1460–6, 1993
36. Warren JI, Fitch WL, Dietz PE, *et al*: Criminal offense, psychiatric diagnosis and psycholegal opinion: an analysis of 894 pretrial referrals. *Bull Am Acad Psychiatry Law* 19:63–9, 1991
37. Anderson SD, Hewitt J: The effect of competency restoration training on defendants with mental retardation found not competent to proceed. *Law Hum Behav* 26:343–51, 2002
38. Wall BW, Krupp BH, Guilmette T: Restoration of competency to stand trial: a training program for persons with mental retardation. *J Am Acad Psychiatry Law* 31:189–201, 2003
39. Ho T: Examination of racial disparity in competency to stand trial between white and African American retarded defendants. *J Black Stud* 29:771–89, 1999
40. McGaha A, Otto RK, McClaren MD, *et al*: Juveniles adjudicated incompetent to proceed: a descriptive study of Florida's competence restoration program. *J Am Acad Psychiatry Law* 29:427–37, 2001
41. Peterson ED, Coombs LP, DeLong ER, *et al*: Procedural volume as a marker of quality for CABG surgery. *JAMA* 291:195–201, 2004
42. Blackstone W: *Commentaries on the Laws of England*. Edited by Jones WC. San Francisco: Bancroft-Whitney Co., 1916, pp 1765–9