Hunger Strikes After Restricted Housing Reform

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Hunger strikes are a common occurrence in carceral settings accompanied by serious health risks and intensive health care utilization. A 2017 study on hunger strikes within the New Jersey Department of Corrections found these events most often occurred in a disciplinary setting. We undertook this study after a new state law, the Isolated Confinement Restriction Act (ICRA), improved conditions of confinement in part by reducing the utilization, nature, and duration of disciplinary housing. We hypothesized that ICRA would reduce the frequency of hunger strikes. Although the frequency of strikes was unchanged, the mean hunger strike duration declined from 28.9 days to 9.7 days (p = .034). The typical strike was modestly briefer, with the median duration before ICRA being four days and after being three days. The rate of hunger strikes greater than three days declined (from 60.3% to 45.2%; p = .049). There was no difference in the rate of hunger striking in disciplinary housing before or after ICRA. Although hunger strikes remain a frequently used method of protest for incarcerated persons, reform to the conditions of confinement was associated with reducing the health-related dangers and associated health care costs of these phenomena and arguably was a factor in this reduction.

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Hunger strikes have been reported in incarcerated persons since the late 19th century.[1,2] As summarized by Reyes and colleagues: "Hunger strikes are a form of protest against a custodial authority where the hunger striker is attempting to draw attention to a grievance by creating an urgent situation that may bring unwanted attention or shame upon the authority as a means of moral leverage" (Ref. 1, p 29). Mass hunger strikes by incarcerated persons and detainees in the California Department of Corrections and Rehabilitation and at Guantanamo Bay, respectively, in the early 2010s brought this phenomenon to the fore.[3] More recently, there have been large-scale hunger strikes by incarcerated persons in the context of the COVID-19 pandemic,[4] as well as in detention facilities for undocumented immigrants in Europe and the United States.[5] Hunger strikes create medical risks for incarcerated people and require considerable attention from medical and custodial officials who are charged with managing these risks. Hunger strikes are of interest to forensic psychiatrists, as many are involved in the direct care of patients in carceral settings, and these incidents raise medicolegal concerns, such as the determination of capacity to consent for food refusal. Hunger strikes in correctional settings are further complicated by the ethics of potentially conflicting duties to the patient and to the facility.[6,7]

Hunger strikes involving avoidance of both food and water (i.e., a dry fast) may be fatal within 72 hours, which is not enough time to draw attention to the striker's cause.[1] Thus, hunger strikes most often involve fasting of food only. A total fast (defined as no nourishment except for water) is more indolent, although is accompanied by serious and progressively worsening health risks, including ketosis and immunocompromise in 72 hours; ataxia, atrophy, and bradycardia in two weeks; uncontrollable nystagmus and difficulty swallowing water by six weeks; impaired higher cognitive function, hearing loss, blindness, and heart failure after six weeks; and eventually death between 55 and 75 days into the strike.[1,2]

The World Medical Association (WMA) issued international standards, including specific medical ethics principles relating to hunger strikes in its

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Declaration of Malta of 1991, updating them in 2006 and 2017.[1,8] The WMA defines a hunger strike as a nonreligious fast lasting equal to or greater than 72 hours.[1] These standards create physician duties, including history and examination, establishing the patient's capacity to engage in the hunger strike, patient education and advice related to the health risks of a prolonged fast, management of medical and mental health symptoms, confidentiality, and (sometimes) mediation with the custodial authority.[1,8] Incarcerated persons are considered to have capacity to hunger strike if they are aware of why they are striking and if they understand the consequences of the behavior.[8] Physician participation in forced feeding is prohibited, although physician judgment is allowed (e.g., in a case where the hunger strike was coerced or otherwise involuntary), and artificial feeding and resuscitation is permissible if the patient's advanced directive calls for it.[1,8] Most persons who hunger strike, whether incarcerated or not, do not want to die.[1]

In Cruzan v. Director (1990)[9], the U.S. Supreme Court upheld the right of competent adults to refuse feeding even if doing so would result in their death. Nonetheless, lower federal and state courts have used the *dicta* from *Washington v. Harper* (1990)[10] to support the forced feeding of incarcerated persons when medically necessary to preserve life.[11] The *Harper* Court held that prison officials have an interest in the safe and secure running of the facility.[10] Hunger strikes can be markedly disruptive to operations not only related to the inordinate amount of attention required by health care, custodial, and administrative staff but also because they challenge the authority of these officials.[1,12]

Rutgers University Correctional Health Care (UCHC) is the health care vendor for the New Jersey Department of Corrections (NJDOC). UCHC's hunger strike protocol is activated when an incarcerated person refuses to take in nourishment to make a political statement and not for religious reasons. This is differentiated from failure to thrive, which is not taking in adequate nourishment for a psychiatric or nonpsychiatric medical reason. Hunger strikers receive an initial assessment, including weight, vital signs, a general medical evaluation, and a determination of capacity to refuse to take in nourishment. If a lack of capacity or active mental health symptoms are suspected, a referral to mental health is made. If the time of reported food refusal exceeds 72 hours, the incarcerated person is transferred to an infirmary for monitoring. While on infirmary status, the patient has daily weight assessments, daily monitoring of vital signs and regular encouragement to take in nourishment and education about the importance thereof. The hunger striker is placed alone in a room with water shutoff capability (i.e., a "dry cell") to adequately monitor fluid intake and output while regularly being offered food and hydration by nursing staff. If hunger strikers have the capacity to refuse food, they are allowed to do so until they lose that capacity or are in imminent danger from the consequences of prolonged fasting. When medically necessary, they are to be transferred to a medical hospital setting for further care. Despite a judge's approval to force feed a hunger-striking incarcerated person in the NJDOC in 2016,[13] force feeding has never happened in the NJDOC.

In September 2017, Reeves and colleagues published "Characteristics of Inmates Who Initiate Hunger Strikes."[13] Over the course of operation of UCHC from January 2005 to September 2015, hunger strikes within the NJDOC were brief (ten days on average, with a median of two days) and rarely involved a significant change in weight. Nearly half of inmates (45%) were in treatment for a mental health problem (i.e., the Mental Health Special Needs roster), whereas the overall rate of such a designation at the time was 15 percent. Moreover, nearly 75 percent of hunger strikes arose from incarcerated persons in a restricted housing (i.e., disciplinary) setting. When known, the most common reasons for starting a strike were to protest discipline, wanting a housing change, and a conflict with custody. Although the reasons for stopping a strike were unknown 83 percent of the time, when they were known, an intervention by custody staff was more often identified as related to the end of the strike. Reeves and colleagues suggested that reform to disciplinary housing in prison could reduce the incidence of hunger strikes.[13]

Restricted housing is an umbrella term for carceral settings involving the separation of an incarcerated person from the general population for administrative, disciplinary, protective, medical, or other reasons. It may be called disciplinary housing, detention, punitive segregation, administrative segregation, isolated or solitary confinement, or supermax. Typically, incarcerated persons in this setting have limited time out of cell; social, recreational, vocational, and educational opportunities; access to property; and privileges (e.g., visits and phone calls).[14] There is a consensus among mental health professionals, as well as advocates, that

such housing is harmful to one's health.[15,16] Research has suggested a link between restricted housing and suicide in prison settings.[17] A recent meta-analysis found that higher-quality studies showed that restricted housing in carceral settings was associated with a higher risk of hostility, depression, psychosis, overall mortality, self-harm, and suicide.[18] James and colleagues' qualitative study on incarcerated women in restricted housing in California found that isolated respondents perceived less access to mental health care and worsened mental and physical health.[19] The National Commission on Correctional Health Care's 2016 position statement opposes the prolonged use of solitary confinement for incarcerated persons.[20] In its position statement updated in 2023, the American Psychiatric Association stated that restricted housing for incarcerated persons with serious mental illness should be avoided.[21] The stressful nature of restricted housing settings and previous research linking hunger strikes with institutional discipline suggest the relevance of reform efforts in this regard.

The New Jersey Isolated Confinement Restriction Act of 2019 (ICRA) substantially limited the time someone may serve in disciplinary housing settings.[22] Isolated confinement is defined as "confinement of an inmate in a correctional facility, pursuant to disciplinary, administrative, protective, investigative, medical, or other classification, in a cell or similarly confined holding or living space, alone or with other inmates, for approximately 20 hours or more per day, with severely restricted activity, movement, and social interaction" (Ref 22, section 3). Candidates for placement in isolated confinement receive a medical and mental health evaluation to determine whether they are a member of a vulnerable population (21 years of age or younger; 65 years of age or older; having a disability based on a mental illness, a history of psychiatric hospitalization, or recent conduct requiring further monitoring for a mental illness; having a developmental disability; having a serious medical condition that cannot be managed in isolated confinement; being pregnant, postpartum, or recently having terminated a pregnancy; having a significant visual or hearing impairment; or perceived to be a member of a sexual minority). Persons deemed vulnerable are not eligible for placement in an isolated confinement setting.

Incarcerated persons suspected of serious rule infractions are placed in prehearing detention (PHD; after ICRA, called prehearing disciplinary housing or PHDH). A potential sanction for a serious rule infraction is administrative segregation (Ad Seg), which would meet the above definition of isolated confinement. In the interest of the orderly management of correctional facilities, the NJDOC adapted by abolishing Ad Seg in favor of restorative housing units (RHUs). Although still separated from the general population, incarcerated persons in RHUs are afforded at least four hours out of cell daily along with access to phones and programming opportunities. Conditions within the RHUs are not considered isolated confinement as defined by ICRA. Some settings, including PHDH, are still considered isolated confinement, but their use is limited by ICRA to no more than 20 consecutive days or 30 nonconsecutive days over a 60-day period.[22]

ICRA went into effect August 1, 2020.[22] By statute, quarterly reports on the usage of isolated confinement are publicly available on the NJDOC website.[22,23] We hypothesized that the substantial and nearly immediately improved conditions of confinement created statutorily by ICRA would reduce the incidence of hunger-striking behavior by incarcerated persons within the NJDOC.

Methods

This retrospective chart review was approved by the NJDOC's Departmental Research Review Board and the Rutgers Robert Wood Johnson Medical School Institutional Review Board. The health care vendor for the NJDOC uses the Athenahealth Centricity Electronic Medical Record (EMR) for clinical documentation. Cases were identified by the presence of the word "hunger" in the summary lines of EMR chart notes dated between January 2015 and December 2022. We collected the following information from each chart: name and booking number (identification number); date the hunger strike was declared; weight at the onset (or within one day) of the hunger strike; date the hunger strike concluded; weight at the end (or within one day) of the hunger strike; date of birth; gender; race; whether or not the person was on the mental health special needs roster (i.e., in treatment for a mental health disorder that impairs functioning in prison); whether the person was housed in disciplinary housing (specified further as PHD or PHDH, Ad Seg, RHU, or other); the presence of any of the following mental health diagnoses: a personality disorder, specifically antisocial personality disorder, a psychotic disorder, major depressive disorder, bipolar affective disorder, an

impulse control disorder or attention deficit and hyperactivity disorder, an anxiety disorder, an adjustment disorder, or malingering; the reason documented for why the hunger strike started; and the reason documented for why the hunger strike ended.

Cases were excluded if the record indicated that the incarcerated person was not under the custody of the NJDOC (e.g., if civilly committed as a sexually violent predator and under the supervision of the New Jersey Department of Health), if the record was filed in error, or if the investigator did not think that the record supported designation as a hunger strike. As in the 2017 NJDOC hunger strike study, we considered a hunger strike begun when documentation supported the declaration of a strike, whether food was refused or not. A threat to strike without a declaration (e.g., "I will hunger strike if. . . " versus "I am on a hunger strike") was not considered a hunger strike unless accompanied by documented food refusals. Rarely, the chart note was about the incarcerated person being hungry rather than refusing food. Out of 265 unique records, five were excluded because the subject was not under the custody of the NJDOC, four were excluded because the notes were entered in error, and 66 were excluded for not being considered a hunger strike by the reviewing investigator. Our third author did a second review, and we came to a consensus about these exclusions.

We determined that a hunger strike had concluded when the subject had either declared it ended or had been discharged from infirmary status with no further documentation of food refusal. For extended hunger strikes, we used the mental health special needs status and diagnoses at the conclusion of the strike. As the details of the reasons for starting and stopping a hunger strike are too numerous to analyze, we abstracted these reasons. Most of these categories were adapted from the 2017 NJDOC hunger strike study: housing change, protest discipline, conflict with custody, conflict with peers, suspected psychiatric symptoms, conditions of confinement, legal, parole, property, political, lack of family contact, dietary, and commissary. Although categorized otherwise in the 2017 study, we also used disagreement with medical treatment (to replace "medical issue") and disagreement with mental health treatment (which previously was subsumed, not always correctly, within suspected psychiatric symptoms). We also included disagreement with classification status (which does not neatly align with disagreement with custody or housing, as classification is an administrative function that affects housing) and support of a hunger-striking peer to identify mass hunger striking, if evident. For reasons for stopping a strike, we used the following categories from the 2017 study: Department of Corrections (DOC) intervention, gave up, mental health intervention, denied hunger strike, medical intervention, moot (released or won court case), and gave up after medical illness. We added legal intervention and "wanted off hunger strike protocol" to reflect a more specific reason than "gave up," if applicable. If a health care intervention was identified as the reason for stopping the strike, we applied a more detailed reason: education, medication or dietary change, transfer to a higher level of care, hospitalization, facilitating a housing change, or otherwise liaising with the DOC. If the reason for starting or stopping the strike was not documented, it was recorded as unknown. Our third author did a second review of these abstractions, and we came to a consensus about them.

Following data collection and verification, as well as calculation of the subjects' age at the date of hunger strike declaration, the dataset was deidentified by removing protected health information, including the date of birth. Summary (i.e., aggregate) statistics were calculated on the number and duration of hunger strikes, the demographics of hunger strikers, changes in weight (if beginning and end weights were available), their psychiatric diagnoses, their presence on the mental health special needs roster, their housing status, and the reasons documented for starting and stopping the hunger strike. We corrected for changes in census by calculating the rate of hunger strikes per year per 100,000 based on the published number of persons under the custody of the NJDOC as of December 31 of the relevant year.[23] Annual rates were prorated, when necessary, as ICRA went into effect August 1, 2020.[22]

For statistical analysis, we used an unpaired t test to evaluate the differences between groups of continuous variables. Linear regression was used to establish whether there were trends over time. The Fisher's exact test was used when comparing categorical variables. Statistical significance for all tests was set *a priori* at $p < .05$.

Results

Summary statistics of hunger strikes before and after ICRA are found in Table 1. There were 213 hunger strikes between 2015 and 2022, 151 being

Table 1 Summary Statistics of NJDOC Hunger Strikes Before and After Reform (2015–2022)

	Pre-ICRA	Post-ICRA	All	*p*
Strikes	151	62	213	.93
Unique strikers	133	57	190	.681
Strikes annually (prorated)	27.0	25.7	26.6	.939
Unique strikers annually (prorated)	23.8	23.6	23.8	.681
Mean hunger strike duration (days)	28.9	9.7	23	.034[a]
Median hunger strike duration (days)	4	3	4	—
Percent strikes >3 days	60.3%	45.2%	55.9%	.049[a]
Max duration (days)	888	222	888	—
Mean weight change (pounds)	−6.9	−5.5	−6.4	.587
Weight loss >10% (when known)	11.1%	8.7%	10.3%	1
Percent unknown weight change	70.2%	62.9%	68.1%	.331

ICRA = Isolated Confinement Restriction Act; NJDOC = New Jersey Department of Corrections.
[a] $p < .05$.

pre-ICRA and 62 being post-ICRA, for a prorated annual rate of 27.0 and 25.7 strikes, respectively. This difference was not statistically significant ($p = .939$). Excluding 2020 because of the stressors of that year (as this was early in the COVID-19 pandemic), the difference was still not statistically significant (28.2 from 2015 – 2019 versus 23.5 from 2021 – 2022, $p = .193$). The prorated annual number of unique strikers before and after reform was also similar (23.8 to 23.6, $p = .681$). Figure 1 shows census-corrected rates of hunger strikes over time. Based on a year-to-year regression analysis, there were no significant trends over time ($R^2 = .07$, $F = .46$, $p = .53$). There were no deaths because of a hunger strike over the course of the study period, and only three strikes resulted in a hospitalization (before ICRA, one psychiatric civil commitment and one medical hospitalization; after ICRA, one psychiatric civil commitment). Although there were no mass hunger strikes in our dataset, we did observe one pair of records of brief hunger strikes that appeared to be in support of each other.

The mean duration of hunger strikes after ICRA was significantly less than before (28.9 days to 9.7 days, $p = .034$), and there were fewer incarcerated persons fasting for more than three days (60.3% to 45.2%, $p = .049$). The median duration of a hunger strike before ICRA was four days, and the median duration after was three days. The longest hunger strike before ICRA was 888 days, and the longest after was 222 days. When adequate weight information was available (data at or within a day of the start and stop dates), the average weight loss was 6.9 pounds, which was 3.5 percent of body weight. A weight loss of more than 10 percent of body weight was uncommon, occurring in only 10.3 percent of hunger strikes with adequate data on weight, with similar results before and after ICRA (11.1% to 8.7%, $p = 1$). More than 70 percent of the time, there was insufficient information to assess whether the subject's weight had changed during the hunger strike. Although such missing information may have been less likely after ICRA (70.2% to 62.9%, $p = .331$), this difference was not statistically significant.

Demographics and housing locations of hunger strikers in the NJDOC from 2015 to 2022 are summarized in Table 2. There were no significant differences before and after reform by age, gender, or race. The rates of hunger striking within disciplinary housing settings, whether prehearing detention or posthearing disciplinary sanctioned housing, were unchanged before and after the implementation of ICRA.

Diagnoses of hunger strikers before and after ICRA are found in Table 3. Replicating results from the 2017 NJDOC hunger strike study, personality disorder in general, and antisocial personality disorder specifically, was the most common diagnosis listed at the time of the hunger strike. Rates of serious mental illness were not insubstantial, with 12.2 percent carrying a diagnosis for a psychotic disorder, 10.3 percent

Figure 1. NJDOC hunger strikes over time. Controlled for year-end census; linear regression: $R^2 = 0.07$, $F = 0.46$, $p = .53$.

Table 2 Demographics and Housing Locations of NJDOC Hunger Strikers Before and After Reform (2015–2022)

	Pre-ICRA	Post-ICRA	All	*p*
Average age	36.9	37.1	36.9	.895
Median age	35	36	35	—
Men	92.5%	98.4%	93.9%	.114
Women	6.0%	1.6%	4.8%	—
TG-F	2.0%	0%	1.4%	—
TG-M	0	0%	0%	—
African American	56.3%	53.23	55.4%	.245
White	27.8%	37.1%	30.5%	—
Hispanic	11.3%	6.5%	9.9%	—
Asian	2.7%	0%	1.9%	—
Other	0.7%	0%	0.5%	—
Unknown	1.3%	3.2%	1.9%	—
Disciplinary housing	72.2%	74.2%	72.8%	.866
PHD, PHDH, or Detention	27.2%	29.0%	27.7%	.866
Ad Seg (Pre-ICRA)	43.7%	—	—	1
RHU (Post-ICRA)	—	43.6%	—	—

Ad Seg = administrative segregation; ICRA = Isolated Confinement Restriction Act; NJDOC = New Jersey Department of Corrections; PHD = prehearing detention (pre-ICRA); PHDH = prehearing detention housing (post-ICRA); RHU = restorative housing unit; TG-F = transgender female; TG-M = transgender male.

for a major depressive disorder, and 10.8 percent for a bipolar disorder. Malingering diagnoses were less commonly listed for hunger strikers after reform (29.1% versus 9.7%, $p = .002$).

The documented reasons for starting a hunger strike are found in Table 4. When indicated, there could be more than one reason ascertained from the EMR chart. There were no statistically significant differences in the reasons for starting a hunger strike before and after restricted housing reform. The most common reasons for initiating a hunger strike were wanting a housing change (25.8%), protesting discipline (19.7%), and suspected psychiatric symptoms (9.4%). Of the 20 cases of suspected psychiatric symptoms, 60 percent had suspected psychotic symptoms and 15 percent reported being suicidal, and in the remainder, the symptoms were unclear or unknown. Of note, this documentation was lacking in only 8.6 percent of the records.

The documented reasons for stopping a hunger strike are listed in Table 5. Again, there could be more than one reason ascertained from the medical record. Most often, the reason for why the hunger strike was stopped was unknown (46.0%). Other common reasons for ending a strike include a DOC intervention (15.0%), a mental health intervention (11.3%), the striker giving up (10.8%), a medical intervention (6.1%), and the striker wanting to be off the hunger strike protocol (4.7%). Although there were no statistically significant differences before and after ICRA in terms of the reasons for stopping a hunger strike, trends toward fewer DOC interventions (17.9% to 8.1%, $p = .09$) and more wanting off the hunger strike protocol (3.3% to 8.1%, $p = .16$) were observed. In 6.2 percent of cases, an intervention by mental health staff involving a medication intervention or a transfer to a mental health unit influenced the end of the strike. Although mental health staff had some influence in ending an additional 5.1 percent of hunger strikes, these were addressed via patient education or liaison with the DOC.

Discussion

Nearly two and a half years after the implementation of restricted housing reform in the New Jersey state prison system, the numbers of hunger strikes,

Table 3 Diagnoses of NJDOC Hunger Strikers Before and After Reform (2015–2022)

	Pre-ICRA	Post-ICRA	All	*p*
Any personality disorder	62.9%	58.1%	61.5%	.538
ASPD	39.1%	41.9%	39.9%	.759
Malingering	29.1%	9.7%	23.5%	.002[a]
No diagnosis	19.9%	32.3%	23.5%	.074
ICD or ADHD	17.2%	19.4%	17.8%	.697
Anxiety disorder	13.3%	17.7%	14.6%	.399
Psychotic disorder	11.9%	12.9%	12.2%	.821
MDD	11.9%	6.5%	10.3%	.323
BPAD	11.3%	9.7%	10.8%	.813
Adjustment	4.0%	0.0%	2.8%	.184
Placement on the MH Special Needs roster	63.4%	57.4%	61.5%	.355
No diagnosis or any personality disorder	82.8%	90.3%	85.0.%	.207

ADHD = attention deficit and hyperactivity disorder; ASPD = antisocial personality disorder; BPAD = bipolar affective disorder; ICD = impulse control disorder; ICRA = Isolated Confinement Restriction Act; MDD = major depressive disorder; MH = mental health; NJDOC = New Jersey Department of Corrections.

[a] $p < .05$.

Table 4 Documented Reasons for Starting a Hunger Strike (2015 – 2022)

	Pre-ICRA	Post-ICRA	All	*p*
Housing change	25.8%	25.8%	25.8%	1
Protest discipline	19.9%	19.4%	19.7%	1
Conflict with custody	11.3%	3.2%	8.9%	.108
Suspected psychiatric symptoms	8.6%	11.3%	9.4%	.607
Unknown	8.6%	9.7%	8.9%	.795
Disagreement with medical treatment	8.0%	11.3%	8.9%	.436
Conditions of confinement	6.6%	8.1%	7.0%	.770
Legal	4.0%	6.5%	4.7%	.482
Parole	3.3%	0.0%	2.4%	.325
Disagreement with mental health treatment	2.7%	6.5%	3.8%	.235
Property	2.7%	3.2%	2.8%	1
Classification	2.7%	0.0%	1.9%	.325
Conflict with peers	2.7%	0.0%	1.9%	.325
Dietary	2.0%	4.9%	2.8%	.360
Lack of family contact	1.3%	1.6%	1.4%	1
Support hunger striking peer	1.3%	0.0%	0.9%	1

ICRA = Isolated Confinement Restriction Act.

the characteristics of hunger strikers, and the rationales for starting or stopping a hunger strike were unchanged. What has changed is that the hunger strikes are modestly shorter than they were in the past. Although it is possible that this difference can be explained by outliers in the pre-ICRA period, the number of strikes lasting more than three days after the reform were significantly fewer (60.3% to 45.2%, $p = .049$). Given that the health risks of a hunger strike are expected to progressively increase over time (assuming an actual restriction of calories and nutrients), shorter hunger strikes should translate into fewer health risks. Put another way, more than half of the more recent hunger strikes in the NJDOC (55.9% after ICRA compared with 39.8% before ICRA) lasted less than three full days and would not have been considered a hunger strike by the World Medical Organization.[1] Also important is that abbreviated hunger strikes necessarily mean fewer hours spent managing these high-intensity events by nursing, custody, administrative, dietary, medical, and mental health staff, among others.

The only statistically significant finding when comparing the characteristics of hunger strikers before and after ICRA was that there were fewer incarcerated persons diagnosed with malingering after the reform.

Table 5 Reasons Documented for Stopping a Hunger Strike (2015 – 2022)

	Pre-ICRA	Post-ICRA	All	*p*
Unknown	43.1%	53.2%	46.0%	.226
DOC intervention	17.9%	8.1%	15.0%	.090
MH intervention total	11.7%	11.3%	11.3%	1
MH intervention (medication)	3.3%	3.2%	3.3%	—
MH intervention (housing)	3.3%	1.6%	2.9%	—
MH intervention (higher LOC)	2.7%	3.2%	2.9%	—
MH intervention (education)	2.0%	3.2%	2.4%	—
MH intervention (liaison with DOC)	0.7%	0.0%	0.5%	—
Gave up	10.6%	11.3%	10.8%	1
Medical intervention total	7.3%	3.2%	6.1%	.355
Medical intervention (education)	5.3%	3.2%	4.7%	—
Medical intervention (diet)	1.3%	0.0%	0.9%	—
Medical intervention (hospitalization)	0.7%	0.0%	0.5%	—
Wanted off hunger strike protocol	3.3%	8.1%	4.7%	.159
Gave up after medical illness	2.7%	0.0%	1.9%	.325
Moot (released)	1.3%	1.6%	1.4%	1
Denied hunger strike	1.3%	1.6%	1.4%	1
Legal intervention	0.7%	0.0%	0.5%	1

DOC = Department of Corrections; ICRA = Isolated Confinement Restriction Act; LOC = level of care; MH = mental health.

This was surprising, as the frequency of personality disorders was similar among hunger strikers both before and after ICRA. A *post hoc* observation was that the number of exclusions (barring those for non-DOC cases and chart notes labeled "filed in error") was substantially and significantly higher after ICRA (annually prorated 5.2 exclusions pre-ICRA versus 15.3 exclusions post-ICRA, $p < .001$, Fisher's exact test). Although our research protocol does not permit chart reviews of excluded cases, based on the notes we took related to the exclusion decisions, these were mostly threats of a hunger strike (without an actual declaration of a hunger strike or food refusal). Had we reviewed these cases, they may have accounted for the observed differences in terms of malingering. They also would have changed the results toward even shorter duration hunger strikes after the implementation of ICRA.

Although we did not specifically collect data on the reasons for missing weight data, refusals were nearly ubiquitous in longer hunger strikes with inadequate data to calculate weight loss, perhaps related to the high number of persons with personality disorders observed in this study. Such refusals may suggest efforts by strikers to conceal evidence that they had access to alternative sources of calories. The percentage of missing weight data (68% of the cases) is similar to what was observed in the 2017 NJDOC hunger strike study (71% of the cases).[13]

We replicated the finding from the 2017 NJDOC hunger strike study that most hunger strikes occur in a disciplinary housing setting. A notable negative finding was that there was no change in the percentage of hunger strikes in disciplinary housing, either short-term (PHD pre-ICRA and PHDH post-ICRA) or long-term (Ad Seg pre-ICRA and RHU post-ICRA). We might have expected that the improved conditions of confinement, including increased time out of cell, increased access to phones and programming, briefer time pending disciplinary hearings, and shorter sanctions, would have disinclined incarcerated persons from hunger striking as a means of protesting such discipline. Citations of protesting disciplinary housing as the reason for the strike happened just as often before reform as it did after (19.9% to 19.4%, $p = 1$). Institutional infractions may have other effects on an individual's liberty, including loss of compensatory time (with a net effect of extending time spent incarcerated), preventing reclassification to a lower security status, reducing the likelihood of being granted parole, and preventing or delaying transition to a halfway house program. The consequences of a disciplinary charge may not matter if the protest is a matter of principle and the striker believes that the charge is unjust. It is also possible that challenges related to the early implementation of ICRA may have created more opportunities for grievances. Further improvements to the conditions of confinement in these settings may yield different results.

Although the purpose of this study was not to compare the results from the 2017 NJDOC hunger strike study with ours, we had notably fewer unknown reasons for starting or stopping a hunger strike. In a *post hoc* analysis referencing the 2017 study, 88 of 292 records' (30.1%) reasons for starting a strike were unknown from 2005 to September 2015.[13] In this study, 18 of 192 (excluding overlapping cases, 9.4%, $p < .001$, Fisher's exact test) reasons were unknown. Reasons for ending a strike were unknown for 214 of 292 records (73.3%) from 2005 to September 2015.[13] In this study, 89 of 192 (excluding overlapping cases, 46.4%, $p < .001$, Fisher's exact test) reasons were unknown. This improvement in documentation was likely related to administrative efforts (including an April 1, 2015 memorandum near the end of the original study period encouraging physicians to document the reasons for a hunger strike), and technological efforts (including the creation on September 4, 2019 of a Hunger Strike Monitoring EMR encounter note that specifically asks about the reasons for a hunger strike).

In the 2017 study, a mental health intervention or a medical intervention were thought to be rarely useful related to the discontinuation of the hunger strike (2% and 1%, respectively). In our study, a mental health intervention was of value 11.3 percent of the time and a medical intervention 6.1 percent of the time, although only very rarely did these interventions involve a transfer to an outside hospital. Although our results still support the primacy of institutional problems and institutional solutions being related to the initiation and conclusion of hunger strikes, they also suggest that the efforts of health care staff, including education and advocacy when appropriate, are sometimes helpful. We cannot exclude that the reduced duration of hunger strikes could be better accounted for by improvements in health care services rather than the effects of ICRA, although continuous quality improvement efforts related to hunger strike management, some of which are described above, long predated reform to restricted housing in the NJDOC.

There are several limitations to this study. As a retrospective chart review, there may have been missing data, incorrectly documented information, or errors made in data abstraction. Our results may not generalize to jails or other state prison systems with differing policies and conditions of confinement. The diagnoses found in the record were clinical diagnoses not necessarily assisted by a psychometric instrument and were entered by clinicians with various qualifications (ranging from licensed clinical social workers to psychiatrists). We used the same methodology as the 2017 hunger strike study to identify hunger strikes by searching for the word "hunger" in the subject line of an EMR chart note. This may have missed hunger strikes documented otherwise, although we suspect that more cases may have been picked up by the current study based on improvements in documentation discussed above. Although efforts were made by reviewers to use similar methodology for data collection and the investigators collecting data were among those participating in the 2017 NJDOC hunger strike study, subtle differences may have occurred, limiting the ability to compare the results from one study with the next. Compared with the 2017 NJDOC hunger strike study, a smaller time frame was analyzed (ten years and nine months in 2017 versus seven years in the present study). The time after intervention (ICRA's effect date) was only two years and five months. It is possible that a longer time frame of study would better reflect the settled impact of ICRA on hunger-striking behavior in the NJDOC. Also, we are unaware of any peer-reviewed data on adherence to the requirements of ICRA by health care and custody staff, as greater adherence may be associated with better conditions of confinement and a reduced need to protest.

The time frame for this study substantially overlapped with the public health emergency related to COVID-19. ICRA went into effect relatively early in the pandemic, while various potentially stressful measures were in effect to promote public health (including the health of New Jersey incarcerated persons), including medical isolation, medical quarantine, frequent testing when available, limitations on the frequency of mental health contacts, suspension of group therapies, and limitations on visitation. Of note, there were only five hunger strikes statewide between August 2020 and December 2020, with a prorated annual rate of 11.9 strikes and a strike rate per 100,000 of 64, which was lower than all other annual rates of hunger striking over the entire study period. Although the rate of hunger strikes rebounded in 2021 and 2022 (164 and 208 per 100,000, respectively, see also Fig.1), there were no statistically significant trends in the rate of hunger striking over time whether 2020 was excluded from the analysis or not.

The strengths of this research compared with the 2017 NJDOC hunger strike study include having a distinct comparison group. The original study used the characteristics and housing settings of the entire population at the end of 2015, which may have included incarcerated persons with hunger strikes then in progress. Also, in the current study, we used census data to control for changes in the population of incarcerated persons over time. The 2017 NJDOC hunger strike study was not controlled for census change, although the census was more stable then. In this study, the official year-end census of the NJDOC dropped from 21,486 in 2015 to 12,492 in 2022 because of various other reforms.[23,24] We also collected information about what types of health care interventions were specifically helpful, if applicable.

At the time the 2017 hunger strike study was published, NJDOC efforts to reform restricted housing were already in progress.[13] New Jersey's ICRA accelerated these efforts by statutorily limiting the use of the most aversive prison housing environments for any purpose, but most often for disciplinary reasons. Our results suggest that ICRA has not reduced the incidence of hunger strikes in the NJDOC, but protests of this nature by incarcerated persons have become briefer and may even end before they begin (i.e., as a threat rather than a declaration of a hunger strike). Shorter hunger strikes, especially food refusals for less than three days, would be expected to translate into fewer medical and mental health risks for incarcerated persons engaging in this behavior. The clinical characteristics of incarcerated individuals who hunger strike are consistently shown to include substantial character pathology. Thus, the typical hunger striker in prison would be expected to have a less adaptive set of coping skills and may engage in potentially self-damaging behavior, a criterion for the diagnosis of antisocial personality disorder as per the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, Text Revision (DSM-5-TR).[25] As the rate of character pathology is high in carceral settings,[26] eliminating hunger strikes here may not be a realistic goal, although improving access to patient-centered psychosocial programming to address criminogenic

thinking (e.g., Thinking for a Change)[27,28] and staff-centered training to improve conflict resolution skills may be opportunities for future research.

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