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DOI: 10.1377/hlthaff.2018.0720
HEALTH AFFAIRS 37,
NO. 11 (2018): 1836-1844
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The People-to-People Health
Foundation, Inc.

Effects Of A Communication-And-Resolution Program On Hospitals' Malpractice Claims And Costs

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ABSTRACT To promote communication with patients after medical injuries and improve patient safety, numerous hospitals have implemented communication-and-resolution programs (CRPs). Through these programs, hospitals communicate transparently with patients after adverse events; investigate what happened and offer an explanation; and, when warranted, apologize, take responsibility, and proactively offer compensation. Despite growing consensus that CRPs are the right thing to do, concerns over liability risks remain. We evaluated the liability effects of CRP implementation at four Massachusetts hospitals by examining before-and-after trends in claims volume, cost, and time to resolution and comparing them to trends among nonimplementing peer institutions. CRP implementation was associated with improved trends in the rate of new claims and legal defense costs at some hospitals, but it did not significantly alter trends in other outcomes. None of the hospitals experienced worsening liability trends after CRP implementation, which suggests that transparency, apology, and proactive compensation can be pursued without adverse financial consequences.

Communicating openly with patients about adverse events and seeking reconciliation are important components of medical professionalism that can also promote patient safety. Many health care facilities are adopting communication-and-resolution programs (CRPs), through which they communicate with patients about adverse events; investigate and explain what happened; and, when appropriate, apologize, take responsibility, and proactively offer compensation.¹⁻⁶

Interest in CRPs has been spurred by recognition of the ethical mandate to disclose errors and the push for greater transparency in health care.⁷ Impetus also derives from studies reporting substantial improvements in liability outcomes and costs after CRP adoption.¹⁻⁴ However, these studies have analyzed single sites and relied on pre/post analysis without comparison groups.

The limited evidence concerning CRPs' cost implications has left many institutional leaders apprehensive. There is concern that offering compensation in all cases of negligent harm could increase compensation costs,^{8,9} especially since most injuries are never litigated.¹⁰ Also, some fear that admitting error is tantamount to giving a patient a blank check and could lead to inappropriately large settlements.¹¹ These worries have chilled some institutions' interest in adopting CRPs¹² and kept some adopters from offering compensation as proactively and consistently as envisioned by patient safety advocates.^{13,14}

To expand the evidence base on the liability effects of CRPs, we examined trends in liability outcomes at four academic and community hospitals in Massachusetts that implemented a CRP and compared them to trends at peer hospitals with no CRP. We found that CRP implementation

was associated with some improvements in the rates of new claims and defense costs, and no implementing institution experienced any worsening of liability trends. In other words, CRP implementation allowed these organizations to fulfill their ethical obligations to disclose adverse events and promote patient safety without encountering negative liability consequences.

The CARE Program And Context

Starting in late 2012, a CRP known as CARE (Communication, Apology, and Resolution) was implemented at two large, urban academic medical centers (AMCs) in Massachusetts (Baystate Medical Center and Beth Israel Deaconess Medical Center), and at two of each center’s community hospitals (Baystate Franklin Medical Center, Baystate Mary Lane Hospital, Beth Israel Deaconess Hospital–Milton, and Beth Israel Deaconess Hospital–Needham).⁵ We evaluated the liability outcomes at both AMCs and two of the community hospitals (the other two community hospitals lacked Institutional Review Boards) for the first four and a half years after CARE implementation. Exhibit 1 shows the study characteristics of implementing and peer comparison hospitals.

CARE was designed collaboratively by a coalition of participating Massachusetts hospitals and stakeholders from the state medical society, patient safety organizations, liability insurers, the state bar association, and academic researchers that came together to form the Massachusetts Alliance for Communication and Resolution following Medical Injury.^{5,12,15} Hospitals committed

to applying CARE in all clinical settings. (A detailed program description is in section A1 of the online appendix.)¹⁶

The CARE protocol called for compensation offers to be made when violations of the legal standard of care (that is, negligence) caused significant harm. (Details and case examples are in appendix section A2.)¹⁶ In general, a hospital conducted an internal investigation and, if prespecified criteria were met, referred the event to the liability insurer for possible compensation. The referral criteria were that the investigation indicated that a standard-of-care violation may have caused significant harm, or the event entered CARE as a “prelitigation notice”—a legally required written notification that a lawsuit would be filed in six months.

Following the insurer’s review, a meeting was held with the patient or their family (and their attorneys, if desired) to discuss resolution. The resolution elements offered were determined by the CARE protocol and known needs or desires of the family, and could include compensation offers, waiver of medical bills, an apology, an explanation of what occurred, or some combination of these elements. For instance, compensation was offered when the prespecified criteria were met, unless family members had indicated that they did not desire compensation.

Adhering to CRP protocol when handling adverse events has proved difficult at a number of hospitals, but a recent evaluation found that the CARE sites we evaluated implemented their CRP with high fidelity.⁵ A review of 989 CARE events concluded that adherence to the CARE protocol was high with regard to the program’s key ele-

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EXHIBIT 1

Launch dates of a communication-and-resolution program (CRP) and pre- and post-implementation periods for implementing and comparison hospitals

	CARE launch date	Pre-implementation period	Post-implementation period
IMPLEMENTING HOSPITALS			
AMC 1	Dec. 1, 2012	Jan. 2006–Dec. 2012	Jan. 2013–Jul. 2017
AMC 2	Mar. 1, 2013	Jan. 2006–Mar. 2013	Apr. 2013–Jul. 2017
Community hospitals ^a	Apr. 1 and May 1, 2013	Jan. 2006–Jun. 2013	Jul. 2013–Jul. 2017 and Jul. 2013–Jul. 2016 ^b
COMPARISON HOSPITALS			
AMCs ^a	— ^c	Jan. 2006–Mar. 2013	Apr. 2013–Jul. 2017
Community hospitals ^a	— ^c	Jan. 2006–Jun. 2013	Jul. 2013–Jul. 2017

SOURCE Authors’ analysis of data supplied by the hospitals’ liability insurers. **NOTES** The CARE (Communication, Apology, and Resolution) program was implemented at two academic medical centers (AMCs) and two community hospitals affiliated with one of the AMCs. The comparison hospital group consisted of three AMCs and two community hospitals. All AMCs were large, urban, not-for-profit teaching hospitals, and all community hospitals were small, suburban, not-for-profit hospitals. For the claims numbers and costs analyses, the beginning of the post-implementation period was set to the first day of the first quarter following CARE implementation. For the time-to-resolution analysis, it was set to the launch dates. ^aPooled data. ^bThe end of the post-implementation period for one community hospital was set to July 2016 because the hospital subsequently came under the administrative control of another facility and stopped providing inpatient care. ^cNot applicable.

ments: disclosing adverse events, relaying investigation findings to patients, and offering compensation when prespecified criteria were met. The analysis also found that 74 percent of the events did not involve violations of the standard of care, which indicates that hospitals did not selectively apply the process to events for which they expected to be held liable. This is important because if CARE were limited to cases of clear negligence, we would not expect to see any change in liability outcomes: Early settlement offers are already common in such cases.

The current evaluation was led by academic researchers outside of the implementing institutions. Institutional Review Board approval was obtained at the researchers' institutions and the hospitals included in the analysis.

Study Data And Methods

ANALYTICAL APPROACH We used interrupted time-series with comparison-group analysis to estimate the effect of CARE on malpractice claims volume, compensation and legal defense costs, and time to resolution. We compared trends in the six years before CARE implementation (2006–12 or 2007–13 were defined as the pre-implementation period, depending on when hospitals implemented CARE) and the four to four and a half years after implementation (2013–17, the post-implementation period) at two AMCs and two community hospitals with CARE and three comparison AMCs and three community comparison hospitals in Massachusetts with no CRP (exhibit 1). This approach permits inferences about CARE's effects independent of general changes in liability outcomes that may have occurred in Massachusetts during the study period.

Data from the comparison AMCs and community hospitals were pooled to avoid identifiability. Data were pooled across the two implementing community hospitals because the numbers of claims at both hospitals were too small to support quarterly models. The length of the post-implementation period varied across hospitals because of different CARE implementation dates and data availability (exhibit 1).

OUTCOME MEASURES Building on methods in a previous analysis,² we calculated several quarterly rates for each hospital or group of hospitals: new claims, new claims receiving compensation, compensation cost, defense cost, total liability cost, and average compensation cost (the total compensation cost divided by the number of new claims receiving compensation). (Details are in appendix section A3.)¹⁶ A claim was defined as any written request for patient compensation that was brought to the liability insurer, whether

Our findings suggest that the main mechanism for preventing claims was open communication about events not involving negligence.

initiated by the patient, family, or hospital. All costs were inflation adjusted to 2017 dollars using the Consumer Price Index. All rates except the average compensation rate are reported per 100,000 clinical encounters (inpatient discharges and ambulatory, emergency department, and observation visits). Additionally, we calculated the time to resolution for each claim, defined as the amount of time (in days) between the date the hospital's safety or risk-management office or the insurer was first notified about the incident (whichever was earlier) and the date the claim was closed.

DATA Hospitals' insurers provided claims-level information on physician and hospital claims and lawsuits, including the date the insurer or hospital's safety or risk-management office was first notified; the patient's age and sex; compensation paid; defense costs; whether the claim was filed as or became a lawsuit; and whether it was closed—and if it was, the date and how it was closed (for example, dismissal). We treated actions against multiple defendants relating to the same incident as one claim.

Monthly data on mean patient age; percentage of female patients; case-mix index; inpatient discharges; and numbers of ambulatory, emergency department, and observation visits were obtained from hospitals' administrative databases. For a few months at some hospitals, annual means for age and sex data were substituted for missing monthly data.

STATISTICAL ANALYSIS To provide a descriptive view of trends, we fitted locally weighted scatterplot smoothing (LOWESS) curves for all outcomes except time to resolution. For purposes of significance testing, we used interrupted time-series analysis to measure the effect of CRP implementation on claims volume and cost outcomes.

For the implementing hospitals, we estimated

classical quasi-Poisson regression models without a random intercept for each AMC separately and for the community hospitals together. For the comparison hospitals, we estimated quasi-Poisson mixed regression models with random intercepts for each hospital for the AMCs together and the community hospitals together. Because case-mix index was associated with most outcomes tested (appendix section A5),¹⁶ we included it in all models. The post-implementation period began at the start of the first calendar quarter after the official CARE launch date at each hospital. To allow for transition time in implementation, our main analysis imposed a one-quarter lag from the start of the post-implementation period. Claims were assigned to the pre or post period based on the date a hospital or its insurer first learned of the event.

In one sensitivity analysis we reran the models without the lag. In a second sensitivity analysis we addressed the fact that 16 percent of claims remained open at the end of our observation period. Our main analyses included those claims, using insurer estimates as proxies for compensation and defense costs (see appendix section A3 for details),¹⁶ while the second sensitivity analysis excluded them.

We examined differences in time to resolution between the pre and post periods at each site. For open claims, it was not feasible to impute the dates on which they would close. To address this problem and create a fair comparison, for claims initiated in the pre period, we defined the last date of follow-up in our cumulative hazard analysis as the CARE implementation date. Time to resolution was defined as the period between first notification and the date closed, the last date of follow-up, or thirty-six months, whichever came first. We also restricted the post-implementation follow-up period to thirty-six months and compared the cumulative rate of closure using log rank tests.

All analyses were performed using R, version 3.3.2. Full regression results are in appendix section A6.¹⁶

LIMITATIONS Our study had several limitations. The most important relates to the fact that some claims were still open at the end of our observation period. Despite the relatively long follow-up (four to four and a half years) after implementation, 16 percent of claims remained open, mostly in the post-implementation period. As noted above, we adjusted our analysis to account for these open claims, but this conservative approach may have underestimated CARE's benefits.

A second potential limitation was confounding. Although we adjusted our models for patient mix, they may have omitted other characteristics

that were also related to the outcome measures. Other than mean patient age, no obvious candidates came to mind.

A third limitation was that more claims might arise for both the pre- and post-implementation periods. This is a greater concern for the latter period because, at the time of our data collection, Massachusetts's three-year statute of limitations for medical malpractice claims had not yet run out for the entire post-implementation period.¹⁷

A fourth limitation arose from the general drive for greater transparency in health care. If the comparison hospitals practiced disclosure and early settlement, even selectively and without a formal CRP, this could have made it harder to detect differences in liability outcomes across hospital groups. However, nothing suggested that the comparison hospitals made significant changes in their responses to adverse events during the study period.

Finally, our results might not be generalizable to other settings. In November 2012 a pre-suit notification law went into effect in Massachusetts, shortly before the studied CRPs were implemented.¹⁸ The law requires malpractice plaintiffs to give defendants 182 days' notice of intent to file a claim. It was designed to give defendants time to investigate and work out a resolution. All hospitals in our analysis were subject to the law, so it could not explain differences across the studied sites. However, hospitals in states without pre-suit notification laws might be less successful in avoiding lawsuits than the Massachusetts hospitals were. Furthermore, Massachusetts has a \$100,000 total damages cap for nonprofit hospitals (which does not extend to health care practitioners at those hospitals) and a \$500,000 noneconomic damages cap (though judges may waive this for serious injuries).¹⁹ These caps could affect claiming and litigation dynamics and thus the impact of CRPs in Massachusetts.

Study Results

CHARACTERISTICS OF THE CLAIMS SAMPLE The sample consisted of 2,300 claims (52 percent at the comparison AMCs, 32 percent at the implementing AMCs, 14 percent at the comparison community hospitals, and 2 percent at the implementing community hospitals). Of these claims, 1,463 (about 64 percent) arose in the pre-implementation period. Approximately 92 percent of claims in the pre-implementation period and 67 percent in the post-implementation period were closed.

HOSPITAL CHARACTERISTICS BEFORE PROGRAM IMPLEMENTATION All of the hospitals we studied had similar patient mixes in terms of sex and age

(appendix exhibit A4).¹⁶ The case-mix index was higher at the AMCs than at the community hospitals.

The rate of new claims per 100,000 clinical encounters in the pre-implementation period was similar across all hospital groups except the comparison community hospitals, which had a higher rate (appendix exhibit A4).¹⁶ The rate of new claims receiving compensation was comparable across all groups. The mean compensation, defense, and total liability cost rates were higher at the comparison hospitals than at the implementing hospitals and were especially high at the comparison community hospitals. The mean payment among paid claims varied substantially across hospital groups.

CLAIMS VOLUME AND COSTS LOWESS curves of time trends indicated that new claims rates decreased over time in the comparison sites, while trends differed among the implementing sites (exhibit 2). Trends in the rate of claims receiving compensation (appendix exhibit A5) and liability cost rates also varied across sites, but apparently not in a systematic way (exhibit 3; appendix exhibit A6).¹⁶ Regression results testing the significance of changes over time are presented in appendix exhibits A8–A24.¹⁶

► **RATE OF NEW CLAIMS:** After CARE implementation, there was a significant decrease in slope for the rate of new claims at the implement-

ing community hospitals and AMC 2, which means that a previous upward trend in the rate of new claims had improved²⁰ (exhibit 2; appendix exhibit A9).¹⁶ AMC 2 also experienced a significant increase in intercept, meaning an upward shift in the new claims rate (appendix exhibit A9).¹⁶ No significant changes in the trend or intercept for their new claims rates were seen at AMC 1 or the comparison hospitals.

► **RATE OF PAID CLAIMS:** Trends in the rate of new claims receiving compensation did not change significantly at any of the hospitals. AMC 2 experienced a significant upward intercept shift.

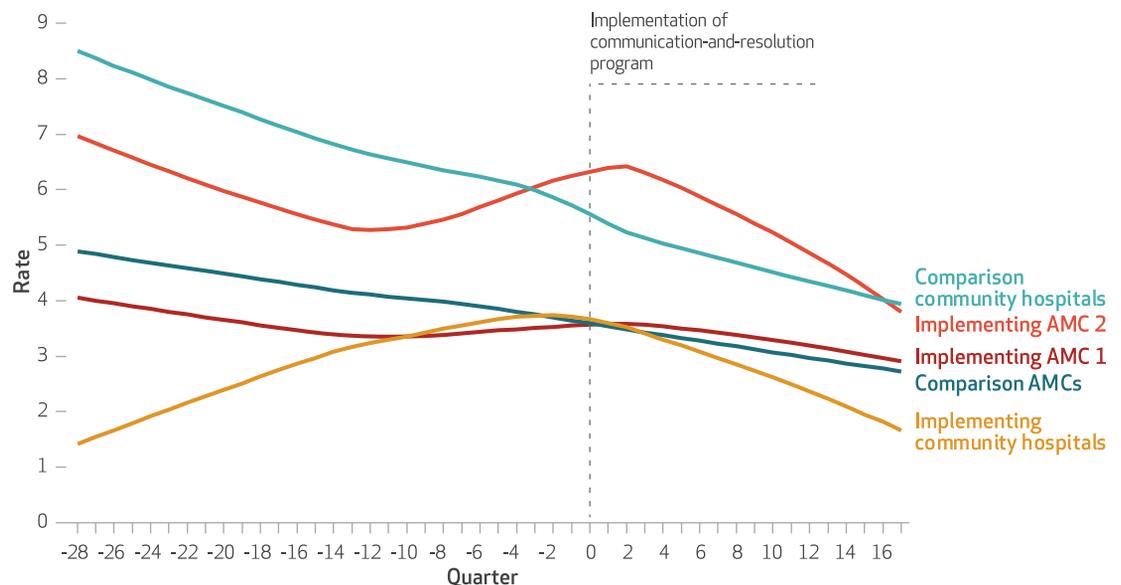
► **COMPENSATION COSTS:** No significant changes in compensation cost trends were observed at implementing or comparison hospitals. The only significant change was an upward shift in the intercept for AMC 1.

► **DEFENSE COSTS:** Both of the implementing AMCs experienced a significant downward slope change for defense costs, meaning that trends in defense expenses improved after CARE implementation. No significant changes in trend or intercept were found for the implementing community hospitals or comparison hospitals.

► **TOTAL LIABILITY COSTS:** No significant changes in total liability cost trends were observed at any of the hospitals. The only significant change found for total liability costs was an

EXHIBIT 2

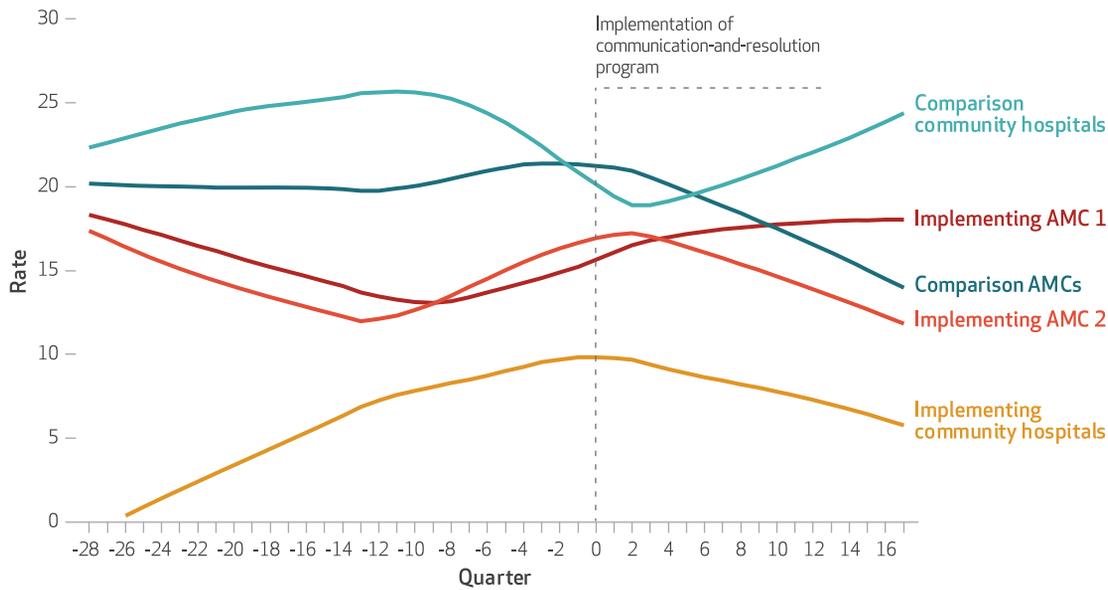
Time trends in rates of new malpractice claims at implementing and comparison hospitals



SOURCE Authors' analysis of data supplied by the hospitals' liability insurers. **NOTES** "Implementing" hospitals are those that implemented the Communication, Apology, and Resolution (CARE) program in Massachusetts; details are in the exhibit 1 notes. Fitted locally weighted scatterplot smoothing (LOWESS) curves show quarterly rates of claims per 100,000 clinical encounters (inpatient discharges and ambulatory, emergency department, and observation visits) adjusted for clinical volume. The post-implementation period, which begins at quarter 0, was standardized across sites for clarity of presentation. AMC is academic medical center.

EXHIBIT 3

Time trends in total malpractice liability claim cost rates at implementing and comparison hospitals



SOURCE Authors' analysis of data supplied by the hospitals' liability insurers. **NOTES** "Implementing" hospitals are those that implemented the Communication, Apology, and Resolution (CARE) program in Massachusetts; details are in the exhibit 1 notes. Fitted locally weighted scatterplot smoothing (LOWESS) curves show quarterly rates of claims as explained in the notes to exhibit 2. The post-implementation period, which begins at quarter 0, was standardized across sites for clarity of presentation. The first two rates for the implementing community hospitals were less than zero. They are not plotted because they were not interpretable. AMC is academic medical center.

upward shift in the intercept at AMC 1.

► **AVERAGE COMPENSATION PER PAID CLAIM:** There were no significant changes in the average compensation amount per paid claim at any of the hospitals.

► **SENSITIVITY ANALYSES:** The results were broadly similar in the models without the one-quarter lag. For AMCs 1 and 2, some significance levels were lower in the unlagged models, which suggests that CARE's effects occurred with a lag.

In the sensitivity analysis that excluded open claims from the cost models, the outcomes for the implementing sites were generally similar to those in the main analysis, with the following changes: AMC 1 joined the other implementing sites in showing a significant improvement in the new claims rate trend, while the improvement in defense costs at both AMCs was no longer significant. The comparison AMCs showed significant improvements in trends for all cost outcomes when open claims were excluded.

TIME TO RESOLUTION No significant differences in time to resolution between the periods before and after CARE was implemented were seen at the implementing or comparison hospitals (exhibit 4). In other words, the survival rates (that is, whether a given claim was still open) at the end of the observation period were similar for both periods.

Discussion

Implementation of a communication-and-resolution program at four Massachusetts hospitals was associated with improved trends in rates of new claims at most sites and in defense costs at the two AMCs, favorable developments that were not seen at comparison hospitals with no CRP. CRP implementation was not associated with significant changes upward or downward in trends of new claims receiving compensation, compensation costs, total liability costs, or average compensation per paid claim, nor was it associated with a significant change in time to resolution.

The evidence base pertaining to the effects of CRPs on liability outcomes is limited to four single-site studies without comparison groups.¹⁻⁴ Other evaluation attempts were unsuccessful because of incomplete CRP implementation, the unavailability of liability data, or a study period that was too short to properly assess liability effects.^{13,14} We sought to strengthen the existing evidence base in four ways.

First, our study evaluated CRP implementation at AMCs and community hospitals in two different hospital systems. Second, we used comparison data from peer AMCs and community hospitals in the same state to help determine whether any observed changes after CRP imple-

EXHIBIT 4

Time to resolution of malpractice claims at implementing and comparison hospitals

	Implementing hospitals			Comparison hospitals	
	AMC 1	AMC 2	Community hospitals	AMCs	Community hospitals
Pre-implementation period					
Number of claims	196	246	25	764	232
Number of claims closed at 36 months	130	169	14	531	133
Cumulative rate of closure at 36 months ^a	67%	70%	58%	70%	58%
Post-implementation period					
Number of claims	137	158	12	439	91
Number of claims closed at 36 months	74	84	6	229	49
Cumulative rate of closure at 36 months ^a	65%	63%	62%	64%	69%
<i>p</i> value for difference in survival rate ^b	0.32	0.15	0.69	0.1	0.11

SOURCE Authors' analysis of data supplied by hospitals' liability insurers. **NOTE** "Implementing" hospitals are those that implemented the Communication, Apology, and Resolution (CARE) program in Massachusetts; details are in the exhibit 1 notes. ^aThe cumulative hazard function: 1 minus the survival probability at thirty-six months. ^bObtained from a log rank test that compared the survival rates (that is, whether a claim was still open) at thirty-six months in the pre- and post-implementation periods.

mentation were attributable to the CRP or other aspects of the local liability environment, such as tort reform. Third, we sought to minimize bias caused by missing outcomes data for still-open claims (which tended to be concentrated in the post-implementation period). Instead of dropping these claims from the analysis, we applied cost estimates for them. Finally, we were able to verify that the CRPs we evaluated were indeed fully implemented,⁵ which imparted greater confidence that any observed absence of change in outcomes was not due to incomplete implementation.

All of the implementing hospitals except AMC 1 saw a significant improvement in their new claims rate trend. This finding is in line with previous claims-level evaluations of CRPs at the University of Michigan Health System, University of Illinois Hospital and Health Sciences System, and Erlanger Health System in Tennessee.²⁻⁴ All reported decreases in the rates of new claims and of new claims receiving compensation, and Michigan and Illinois also reported improvements in claims rate trends.²⁻⁴

Although facilitating rapid settlements in situations where negligence caused harm is an important potential benefit of CRPs, our findings suggest that the main mechanism for preventing claims was open communication about events that did not involve negligence. About 74 percent of the CARE events did not involve a standard-of-care violation.⁵ The downward trend in new claims at the implementing sites could be related to liability reforms enacted in Massachusetts around the time CARE was implemented. But if this were the case, we would have expected to see a similar change in trend for the comparison

hospitals, and we did not.

Another potential advantage of CRPs is that by reducing the need for litigation, they may lower defense costs in at least three ways. In cases without medical error, communication and explanation may prevent patients from filing suit. In cases involving negligence, instead of practicing "deny and defend," organizations with CRPs proactively offer compensation. And in cases where institutions with CRPs first learn of a negligent injury through a lawsuit, instead of litigating they work with patients to reach a speedy resolution. Consonant with these theoretical benefits of CRPs and the reported outcomes at the University of Michigan and the University of Illinois,^{2,3} we found improved defense cost trends at both implementing AMCs that were not observed at the comparison AMCs. Improved defense cost trends were not seen at the implementing community hospitals, but that might reflect their low volume of claims—which made it statistically difficult to detect effects.

We observed no changes in overall liability cost trends at any of the implementing or comparison sites. In contrast, evaluations of CRPs at the University of Michigan, the University of Illinois, and Erlanger Health System reported lower total liability costs after implementation, with the former two systems also reporting significant improvements in total liability cost trends.²⁻⁴ There are notable differences in methods and settings across these studies that may explain the difference in cost outcomes.

The University of Michigan and University of Illinois studies excluded open claims (which accounted for about 3 percent and 16 percent of the samples, respectively) from their cost analyses,

CRP implementation was expected to reduce the time to resolution of claims, but we did not see this effect.

and the Erlanger Health System study assigned an average settlement cost to all open claims.²⁻⁴ If open claims are concentrated in the post-implementation period, excluding them could understate costs in that period. We included open claims and used claim-specific estimated costs for them. A drawback to including open claims is that if the estimated costs used are too high (because they were based on pre-implementation experience), this could obscure the savings from implementing CRPs. In our sensitivity analysis, excluding open claims did not affect the significance of changes in cost trends for implementing hospitals, but it did for comparison hospitals.

Another difference across studies is the length of the observation period. The Michigan and Illinois studies evaluated their CRPs seven years after implementation, and the Michigan study did not evaluate effects for the first two years. If early CRP effects are more modest than later ones, such differences might affect study outcomes. Finally, Massachusetts's damages cap for all of the hospitals in our analysis was raised from \$20,000 to \$100,000 just before CARE implementation, which could have caused some upward liability cost pressure on post-implementation settlements.²¹

CRP implementation was expected to reduce the time to resolution of claims, but we did not see this effect. In contrast to prior studies, ours did not drop open claims and compare the average months to resolution, because of the large number of open claims in the post-implementation period. Our alternative approach created a more evenhanded comparison but used a less granular measure of change. We analyzed the proportion of claims that closed within three years and compared the likelihood of claims remaining open at that time. This approach might have missed capturing the benefit of CRPs, especially if time savings are driven by lawsuits that take more than three years to resolve.

Most important, the lack of difference in time to resolution of claims may ironically be the result of an effective CRP process. If CRPs are preventing events that clearly do not involve negligence from becoming claims, such cases will not appear in the claims data for the post-implementation period. That period would therefore have a larger proportion of claims of debatable merit, which likely take longer to resolve. If this were the case, it would make it more difficult to identify a shorter time to resolution among claims, although from the hospital's perspective, things have improved because only the toughest cases proceed to claims.

Conclusion

Our study results strengthen the growing evidence base indicating that implementing a communication-and-resolution program does not expand liability risk and may, in fact, improve some liability outcomes. Although in theory, routinely offering compensation where negligence causes serious harm should mean that more injuries are compensated, and although the hospitals in our study adhered to the CRP protocol faithfully,⁵ total liability cost trends did not worsen, and trends in defense costs and rates of new claims improved. Hospitals in the same state without CRPs did not experience these benefits.

The implementing hospitals in Massachusetts did not see the dramatic reduction in claims costs or trends that earlier CRP pioneers did.^{1,2} However, the Massachusetts hospitals were able to change their approaches to medical injury response to better comport with medical professionalism and foster patient safety improvement without adversely affecting liability costs. Claims-related expenses are not the only cost of CRPs: These programs also bring administrative costs. Nor are reduced claims costs the only benefit, because CRPs that improve patient safety may reduce lost revenue (for example, bill waivers and Medicare nonpayment for services related to avoidable adverse events). Institutions weighing CRP adoption should consider the full array of economic implications, along with the ethical case for transparency.

Future research should focus on three more pressing questions. First, how can institutions ensure that CRPs are implemented as envisioned, having honest conversations with patients for every harmful event and proactively offering compensation when it is due? Second, how can communication and compensation practices in CRPs be refined to better serve patients' needs? Finally, how can the work of CRPs more strongly drive patient safety improvement?

The real promise of CRPs will be achieved when implementing institutions can consistently show not only that the programs improve reconciliation after adverse events, but also that they prevent avoidable events from recurring. ■

Parts of the preliminary results were presented at the Massachusetts Alliance for Communication and Resolution following Medical Injury's (MACRMI's) fifth CARE Forum, May 15, 2018, in Waltham, Massachusetts, which included stakeholders from implementing institutions and others interested in implementing the Communication, Apology, and Resolution (CARE) program. With the editors' permission,

the manuscript has been presented at faculty workshops at Yale Law School and Vanderbilt Law School. The CARE implementation and this analysis were funded by grants from Baystate Health Insurance Company, Blue Cross Blue Shield of Massachusetts, CRICO RMF, Coverys, Harvard Pilgrim Health Care, Massachusetts Medical Society, and Tufts Health Plan. Some sponsors reviewed a draft of the manuscript to

confirm that data were adequately deidentified but were not otherwise involved in the analysis or reporting of data for this article. The authors thank the insurers and implementing and comparison hospitals for their data contributions. The authors are also grateful to the MACRMI participants for their input and guidance on CARE implementation.

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- 16 To access the appendix, click on the Details tab of the article online.
- 17 Mass. Gen. Laws ch. 260, sect. 4 (2018).
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- 20 Changes in the intercept are interpreted as showing an immediate post-implementation change in the level of the outcome, relative to the pre-implementation trend. Positive values indicate an upward shift in the outcome, and negative values a downward shift. Changes in slope are interpreted as showing a change in trend before and after implementation. Changes in the intercept are of less interest than changes in trend because the main liability question about CRPs is whether they affect claims experience over the longer term and because immediate changes are harder to conclusively attribute to CRPs, given the ramp-up or learning period that new program implementation typically involves.
- 21 Mass. Gen. Laws ch. 231, sect. 85K (2018).