

# Physician Organizations' Use of Behavioral Nudges to Influence Physician Behavior

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Physicians make many decisions that drive the cost and quality of care that patients receive.<sup>1,2</sup> Numerous studies detail widespread variation in quality of care,<sup>3</sup> missed opportunities for evidence-based care,<sup>4</sup> and substantial use of low-value care<sup>5</sup> resulting in wasteful spending. To spur quality improvements and reduce health spending, policy makers and payers have applied various strategies, including performance-based financial incentives, to influence physician and health care organization behavior. Financial incentives have had modest and mixed effects,<sup>6,7</sup> and concern has been expressed that financial incentives may reduce providers' intrinsic motivation to deliver the best care.<sup>8</sup>

With US health spending totaling \$3.8 trillion and 17.7% of the gross domestic product in 2019,<sup>9</sup> identifying mechanisms to control spending is a policy priority. Because physicians are central actors in efforts to improve health care costs and quality, interest in applying behavioral economics approaches, such as behavioral nudges, to influence physician behavior is growing.<sup>10</sup> Such approaches seek to structure the decision-making environment in ways that support achievement of desired goals and reduce systematic errors that occur when individuals rely on mental shortcuts or heuristics to quickly make decisions.<sup>11</sup> Behavioral nudges are described as any aspect of the way in which choices are presented that influences or alters decision-making in a predictable way but does not forbid or penalize any choice.<sup>12</sup> Nudges can be designed in various ways: "opt in" vs "opt out," defaults, checklists, social norms, commitment or attestations, or reframed options.

Physicians commonly are presented with information in ways unrelated to their clinical or cost effectiveness (eg, alphabetically), rather than strategically to influence choice (eg, first-line therapy or generic medication at the top of the list).<sup>13</sup> Although behavioral economic interventions in health care targeting patient behaviors<sup>14</sup> have been studied, assessments of the effectiveness of behavioral economic interventions to influence physician behavior are just emerging.<sup>15</sup>

Health system-affiliated physician organizations (POs) may be among the best equipped physician practices to implement behavioral nudges given their size, infrastructure, and organizational

## ABSTRACT

**OBJECTIVES:** Because physicians' decisions drive health care costs and quality, there is growing interest in applying behavioral economics approaches, including behavioral nudges, to influence physicians' decisions. This paper investigates adoption of behavioral nudges by health system-affiliated physician organizations (POs), types of nudges being used, PO leader perceptions of nudge effectiveness, and implementation challenges.

**STUDY DESIGN:** Mixed-methods study design (PO leader survey followed by in-depth qualitative interviews). Purposive sample of 30 health system-affiliated POs in 4 states; POs varied in size and quality performance.

**METHODS:** We collected data between October 2017 and June 2019. The survey asked PO leaders to report their organization's use of 5 categories of nudges to influence primary and specialty physicians' actions. We conducted semistructured phone interviews to confirm survey responses, elicit examples of the nudges that POs reported using, understand how nudges were structured, and identify implementation challenges. We present descriptive tabulations of nudge use and effectiveness ratings. We applied thematic analysis to the interview data.

**RESULTS:** Almost all POs in this study reported nudge use. Clinical templates, patient action lists, and altered order entry were most commonly used. However, PO leaders reported that nudge use was limited to a narrow range of clinical applications, not widespread across the organization, and mostly structured as suggestions rather than default actions or hard stops.

**CONCLUSIONS:** Nudge use remains limited in practice. Opportunities exist to expand use of nudges to influence physician behavior; however, expanding use of behavioral nudges will require PO investment of resources to support their construction and maintenance.

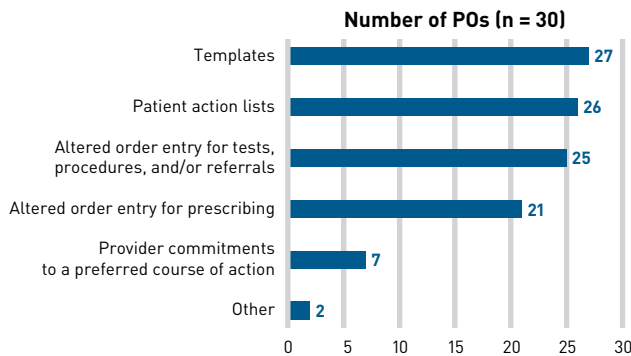
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TAKEAWAY POINTS

Physician organizations (POs) are applying behavioral nudges in the physician practice environment to influence physician behavior.

- ▶ Types of nudges most commonly used were clinical templates, patient action lists, and altered order entry for prescriptions, tests, procedures, and referrals.
- ▶ Nudge use was limited to a few clinical applications and not widespread across POs.
- ▶ POs cited challenges in building nudges and maintaining their currency given the evolving clinical evidence.
- ▶ Opportunities exist to expand the use of nudges to improve care and reduce wasteful spending. Research is needed to evaluate the effectiveness of nudges, which could promote greater use of nudges in clinical practice.

FIGURE 1. Number of POs Reporting Use of Different Types of Nudges to Influence Physician Behavior



PO, physician organization.

Source: Authors' analysis of primary data collected by the study team.

resources; as such, they may serve as a bellwether of use of nudges in the broader PO community. To understand the current landscape of nudge use to influence frontline physician behavior, we conducted a study of health system–affiliated POs to measure the extent of nudge use in practice, the types of nudges being deployed, how they were structured to influence behavior, PO leader assessments of nudge effectiveness, and implementation challenges that might shed light on issues related to uptake of nudges and expanded use.

DATA AND METHODS

This study is one component within a larger study examining actions that health systems are taking to deliver evidence-based care and improve cost and quality performance.<sup>16</sup> The larger study selected a purposive sample of 24 systems (several with multiple POs) of varying size and performance for in-depth assessment<sup>17</sup> in California, Washington, Minnesota, and Wisconsin (see eAppendix [available at [ajmc.com](http://ajmc.com)]). We report findings from 30 POs (22 of the 24 health systems) that completed a survey and follow-up interview.

We collected data from PO leaders between October 2017 and June 2019. We first surveyed each PO on their use of 5 categories of nudges to influence primary and specialty physicians' actions: (1) templates (eg, order sets or checklists); (2) altered order entry for prescribing (eg, arranging or grouping to highlight generic vs brand or preferred medication classes); (3) altered order entry for tests, procedures, or referrals (eg, prioritized listing of preferred options, approvals required for nonpreferred options); (4) patient action lists (ie, reminders to address care gaps); and (5) use of formal

commitments to a preferred course of action (eg, physician pledge to select high-value care options). PO leaders rated the extent to which they agreed (5-point Likert scale<sup>18</sup> ranging from “strongly disagree” to “strongly agree”) that various mechanisms, including nudges, were effective in improving physician performance. We then conducted 1-hour semistructured phone interviews with PO leaders to confirm survey responses, elicit examples of the nudges they reported using and how nudges were structured (default/required action or as informational/suggestive), and identify implementation challenges.

We present descriptive tabulations of nudge use and effectiveness ratings. Two analysts coded and summarized interview transcripts using Dedoose, with a pooled kappa interrater reliability score across all codes of 0.79 (details in eAppendix). From the qualitative interviews, we identified specific examples of nudge use, the structure of the different types of nudges that PO leaders reported their organizations were using, and challenges they cited with implementing nudges. The RAND Human Subjects Protection Committee approved this study.

RESULTS

All 30 system-affiliated POs were not-for-profit entities; 14 (47%) were academic medical center affiliated. By practice type, 25 (83%) were medical groups and 5 (17%) were independent practice associations (IPAs). Fifteen (50%) were in California, 7 (23%) were in Minnesota, 5 (17%) were in Wisconsin, and 3 (10%) were in Washington. The systems ranged in size from 45 primary care physicians (PCPs) to 1000, with a median of 173 PCPs.

Use of Nudges

Roughly two-thirds (19/30) of POs reported using 4 or 5 of the 5 types of nudges (eAppendix Figure); only 1 PO reported zero nudge use. Templates were the nudge type most frequently cited (27/30) (Figure 1), followed by patient action lists (26/30) and altered order entry for tests, procedures, or referrals (25/30). About two-thirds of POs reported using altered order entry for prescribing (21/30), whereas physician commitments were less commonly used (7/30). Regarding order sets, one PO leader commented, “If the order is fed,

it pushes physicians to do the right thing for the right patient,” and another noted that order sets “help make it easy for providers to choose the pathway that’s most likely to result in the best outcome for patients.”

### Design of Altered Order Entry Nudges

Among the 25 POs reporting use of altered order entry for tests, procedures, and/or referrals (Figure 2), most structured the nudge to make preferred options easier to access and select (22/25), followed by requiring exceptions or additional review (19/25), purposeful ordering of options (17/25), and prompts suggesting alternatives (17/25). A number of POs structured order entry to make it easier to order procedures or make referrals within their own system, with one PO stating, “We’re trying to keep care within our system. We think we give better care. It makes it easier to coordinate care.” Fewer POs reported making less-preferred options harder to access or select (12/25). Several POs indicated that they use advanced imaging decision support, requiring physicians to justify orders against indication criteria and, in some cases, suggesting alternatives, but never preventing ordering. One PO indicated that it was in the process of building nudges for laboratory orders that would show laboratory tests’ costs, whereas another had built Choosing Wisely low-value care guidelines into order entry. One PO leader commented, “We make it harder to do dumb things. [For instance,] there’s no evidence that vitamin D testing has helped anyone. We put in extra clicks to make people think about whether vitamin D testing is beneficial.”

Among those (21/30) using altered order entry for prescribing (Figure 2), nearly all made the preferred option easier to access or select (19/21), followed by purposeful ordering of prescription options (16/21). Several PO leaders stated that their nudges were designed to make it easy to do the right thing. For example, one PO presented physicians “with pain [medication] orders that are our preferred drugs and preferred quantities.” Defaults, when used, were used for generic prescribing. Less common approaches included prompts suggesting alternatives (13/21) and additional review or exception requirements (12/21).

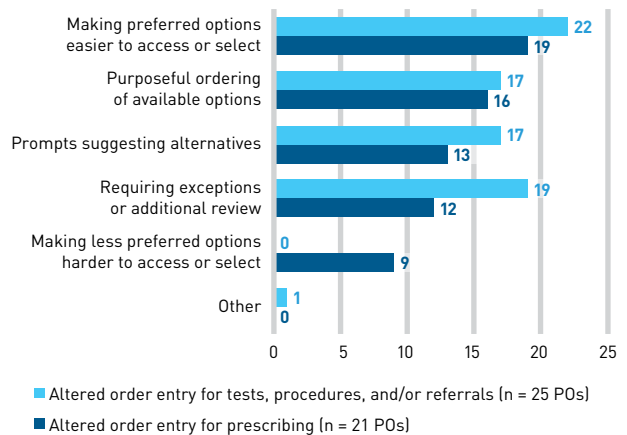
### Extent of Nudge Use

Only 2 of 30 POs reported widespread nudge use across their practice environment. PO leaders reported that application of nudges varied by specialty and were most commonly used in primary care, hospital medicine, larger practice sites, and in medical group practice models compared with IPA practice models. Most widely applied were smart sets, best practice alerts, and checklists for routine care.

### Perceived Effectiveness of Nudges

Twenty-four of 30 PO leaders agreed or strongly agreed that nudges were effective mechanisms to improve physician performance, although system-level assistance (eg, care managers, chronic care clinics) (26/30), unblinded performance feedback and peer comparisons (25/30), and financial incentives (25/30) were perceived to be somewhat more effective (eAppendix Table).

**FIGURE 2.** Specific Types of Nudges Used Among POs That Reported Using Altered Order Entry for Prescribing or Altered Entry for Tests, Procedures, and/or Referrals



PO, physician organization.

Source: Authors’ analysis of primary data collected by the study team.

### Implementation Issues

Many PO leaders reported that more opportunities to apply nudges exist within their organization but would require time and resources to develop and be implemented. Leaders also cited challenges in customizing nudge tools, which requires resources, modifications to electronic health records (EHRs), and keeping up with evolving evidence. One leader commented, “Changing the opioid prescribing logic based on new evidence would require making 6000 changes in our EHR where opioid prescribing occurs.”

Some PO leaders expressed caution about applying too much pressure through nudges, remarking “it isn’t like we’re doing this to people” but rather “we engage with our physicians to determine the order set defaults based on the evidence.” Another leader stated that “...it sounds like we’re nagging people to do the right thing rather than recognizing we’ve engineered it wrong to begin with and we’re working with them to reengineer it. Rather than a nudge, it’s a support.”

PO leaders reported variability in physician use of nudge tools, noting that this reflects that some nudges are optional and can be ignored or bypassed. One leader commented, “Our challenge right now is how [to] start to drive behavioral change [so] that when you see those things, providers automatically think ‘This is a gap I need to close.’”

## DISCUSSION

Among our sample of 30 health system–affiliated POs, most are using nudges, mainly order sets, checklists/patient action lists, and making preferred medications or care options easier to select. Among smaller POs and those not affiliated with health systems, we would expect less use of nudges because these POs may have

## TRENDS FROM THE FIELD

less infrastructure and resources to support nudge development, implementation, and maintenance. Although nudges were being applied in practice, PO leaders' descriptions of their nudges reveal that the applications tend to be limited in their scope and strength to drive behavior change.

We suspect that the frequent use of templates and action lists occurs because the EHR systems purchased by system-affiliated POs have similar, relatively standard features as part of the core EHR platform, prompted by national meaningful use policy standards. Beyond these standard EHR features, fewer custom nudge applications were occurring. Other sources of nudges were third-party add-ons and PO-developed tools. Some POs reported that clinician leaders were engaged in nudge development, particularly in designating which medications were preferred or ensuring that the clinical logic of the nudge was reflective of best practice within the PO.

The PO leaders' experiences provide useful insights for other organizations that are considering the implementation of nudges. First, time and resources are required to develop and implement nudge tools, whether they are developed internally or with external entities. Although a nudge may target a single application, the targeted action frequently occurs in many different clinical scenarios and practice environments, adding complexity to building and maintaining nudges. Second, PO leaders grappled with how much pressure to apply, specifically whether prompted actions are optional or suggestive rather than defaults. Future research examining the effects on physician behavior of nudges that vary in strength could yield useful information for nudge design. Third, PO leaders highlighted the importance of engaging physicians in nudge design.

### Limitations

We examined only system-affiliated POs that likely have greater resources and more advanced health information technology capabilities to build nudges and to ensure that they remain up to date with scientific evidence; therefore, our estimates of nudge use likely are biased upward relative to the broader set of POs in the United States. Self-reported data may suffer from social desirability bias (ie, reporting greater use than is true); however, participants understood that results would be blinded for reporting. Our study was not designed to represent a summative evaluation of the effectiveness of nudge efforts deployed by the POs. POs did not appear to be engaging in formal evaluations of their nudge applications. This represents an opportunity for future research.

## CONCLUSIONS

Our study findings suggest that further opportunities exist to expand the use of nudges to influence physician behavior. Expanding the use of behavior nudges will require investment of resources to

support nudge construction and maintenance. Research to evaluate the effectiveness of nudges across more clinical scenarios and applications could generate needed evidence to support greater use of nudges in clinical practice. ■

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## REFERENCES

1. Emanuel EJ, Steinmetz A. Will physicians lead on controlling health care costs? *JAMA*. 2013;310(4):374-375. doi:10.1001/jama.2013.60073
2. Crosson FJ. Change the microenvironment: delivery system reform essential to control costs. *Mod Healthc*. 2009;39(17):20-21.
3. Brook RH, Lohr K, Chassin M, Koseoff J, Fink A, Solomon D. Geographic variations in the use of services: do they have any clinical significance? *Health Aff (Millwood)*. 1984;3(2):63-73. doi:10.1377/hlthaff.3.2.63
4. McGlynn EA, Asch SM, Adams J, et al. The quality of health care delivered to adults in the United States. *N Engl J Med*. 2003;348(26):2635-2645. doi:10.1056/NEJMsa022615
5. Reid RO, Mafi JN, Baseman LH, Fendrick AM, Damberg CL. Waste in the Medicare program: a national cross-sectional analysis of 2017 low-value service use and spending. *J Gen Intern Med*. 2021;36(8):2478-2482. doi:10.1007/s11606-020-06061-0
6. Damberg CL, Sorbero ME, Lovejoy SL, Martsolf GR, Raaen L, Mandel D. Measuring success in health care value-based purchasing programs: findings from an environmental scan, literature review, and expert panel discussions. *Rand Health Q*. 2014;4(3):9.
7. Eijkenaar F, Emmert M, Scheppach M, Schöffski O. Effects of pay for performance in health care: a systematic review of systematic reviews. *Health Policy*. 2013;110(2-3):115-130. doi:10.1016/j.healthpol.2013.01.008
8. Berwick DM. The toxicity of pay for performance. *Qual Manag Health Care*. 1995;4(1):27-33. doi:10.1097/00019514-199504010-00003
9. Martin AB, Hartman M, Lassman D, Cattlin A; National Health Expenditure Accounts Team. National health care spending in 2019: steady growth for the fourth consecutive year. *Health Aff (Millwood)*. 2021;40(1):14-24. doi:10.1377/hlthaff.2020.02022
10. Halpern SD, Ubel PA, Asch DA. Harnessing the power of default options to improve health care. *N Engl J Med*. 2007;357(13):1340-1344. doi:10.1056/NEJMs071595
11. Tversky A, Kahneman D. Judgment under uncertainty: heuristics and biases. *Science*. 1974;185(4157):1124-1131. doi:10.1126/science.185.4157.1124
12. Thaler RH, Sunstein CR. *Nudge: Improving Decisions About Health, Wealth, and Happiness*. Yale University Press; 2008.
13. Patel MS, Volpp KG, Asch DA. Nudge units to improve the delivery of health care. *N Engl J Med*. 2018;378(3):214-216. doi:10.1056/NEJMp1712984
14. Volpp KG, Loewenstein G, Troxel AB, et al. A test of financial incentives to improve warfarin adherence. *BMC Health Serv Res*. 2008;8:272. doi:10.1186/1472-6963-8-272
15. Meeker D, Knight TK, Friedberg MW, et al. Nudging guideline-concordant antibiotic prescribing: a randomized clinical trial. *JAMA Intern Med*. 2014;174(3):425-431. doi:10.1001/jamainternmed.2013.14191
16. Ridgely MS, Butterff C, Wolf LJ, et al. The importance of understanding and measuring health system structural, functional, and clinical integration. *Health Serv Res*. 2020;55(suppl 3):1049-1061. doi:10.1111/1475-6773.13582
17. Ridgely MS, Duffy E, Wolf L, et al. Understanding U.S. health systems: using mixed methods to unpack organizational complexity. *EGEMS (Wash DC)*. 2019;7(1):39. doi:10.5334/egems.302
18. Likert R. A technique for the measurement of attitudes. *Arch Psychol*. 1932;22(140):5-55.

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## eAppendix

### **Nudge Definition**

We asked, both on the survey and in follow-up qualitative interviews, health system-affiliated physician organization (PO) leaders to identify whether there was anything the PO was doing to nudge or implicitly influence the choices their primary care and specialty physicians make. We defined a nudge as “any aspect of the way choices are presented to physicians that influences or alters decision-making in a predictable way but which does not forbid any options or penalize any choice. Nudges can be designed in several ways: “opt in” vs. “opt out,” defaults, checklists, social norms, commitment or attestations, reframing options.”

### **Health Systems and Physician Organizations—Study Sample**

The RAND Center of Excellence on Health System Performance defined a health system as being “comprised of two or more health care organizations (e.g., hospitals, physician organizations, etc.), affiliated with each other through shared ownership or a contracting relationship for payment and service delivery.” Health systems had to have at least one acute care hospital and a multi-specialty physician organization (PO) comprised of both primary care and specialty physicians.

Using secondary data sources, we identified the health system affiliations of all POs publicly reporting performance data in California, Washington, Minnesota, and Wisconsin. The data sources included proprietary data (e.g., SK&A Physician Survey, AHA Annual Survey); data from federal agencies (Medicare’s PECOS, MD-PPAS and Physician COMPARE); and publicly-available data from state health care regulatory agencies. We selected the four states because each hosts a health care measurement and improvement collaborative that agreed to

provide performance data and help recruit health systems. We selected a purposive sample of 24 health systems to achieve variability on important attributes (e.g., size and performance), with the sampling skewing slightly towards larger health systems. We measured health systems' size by the number of primary care physicians (PCPs). The health systems ranged in size from 45 PCPs to 1000 PCPs, with the median at 173 PCPs (mean of 195 PCP). Systems were classified into high/medium/low performance based on a composite of publicly-reported clinical quality measures in the state.

## **Data Collection and Analysis**

To study the use of nudges by health system-affiliated POs, we developed a 36 question structured survey that asked about financial and non-financial incentives and nudges being used by the PO. The survey was sent to senior leaders (e.g., medical director, quality officer) within the PO who were identified by the health system Chief Executive Officer as knowledgeable about use of financial and non-financial (i.e., nudges) incentives to influence the behavior of frontline physicians. The survey was sent to the PO leader after an introductory call, where the study team explained the purpose of the study and the information the study team sought to collect. The survey used closed-ended response choice (yes/no) questions to determine the PO's use of 5 categories or types of nudges:

1. Templates (e.g., order sets, check lists),
2. Altered order entry to influence physician decisions regarding prescribing,
3. Altered order entry to influence physician decisions regarding tests, procedures, and/or referrals,
4. Patient action lists (suggesting items that are due for each patient), and
5. Commitments to a preferred course of action.

Within the 2 of the 5 nudge types, specifically altered order entry (#2 and #3 above), the PO was asked to provide more specificity on the type of altered order entry nudge they reported. The list of nudge approaches was informed by literature review, expert input from physician researchers who work in clinical settings where nudges are being deployed, and from a study team member's experience conducting nudge experiments in clinical settings. At the close of the survey, the PO leader responding to the survey was asked to rate the extent to which they agreed (using 5-point Likert scale ranging from 1="strongly disagree" to 5="strongly agree") that various mechanisms were effective at improving the performance of your frontline physicians", with nudges being one of the mechanisms to influence physician choice/action. The survey questions and open-ended interview questions are provided below.

After receipt of the completed survey, the study team conducted a 60 minute follow-up phone interview with the PO leader (and other staff with content expertise identified by the PO leader). The phone interview (see questions under data collection instruments) used an open-ended qualitative discussion guide. The phone interview questions focused on confirming the PO leader's understanding of the nudge definition and what constitutes a nudge, confirming the use of nudges they reported in the survey, asking for specific examples of nudges reported being used in each of the five nudge categories where they marked "yes", and asking them to describe how nudges reported were structured (i.e., as a default/required action or a suggestion) to assess the relative strength of the nudge. We asked PO leaders to qualitatively assess how widely their physician organization was using nudges to influence the decision of frontline physicians

Two study team members, trained and supervised by the two senior researchers on the study team (the Principal Investigator and Co-Investigator) and an experienced qualitative researcher, coded all recorded interview transcripts using Dedoose, a web platform for analyzing qualitative data, which facilitates team-based data coding. The study team programmed a codebook, based on the main interview questions (shown below), and used a multi-stage process of testing, adding, and refining codes. One team member coded two transcripts based on discussion among the research team, the codebook was then further refined based on the initial coding. The two team members then independently coded transcripts for the first 6 interviews and achieved an interrater reliability score (pooled kappa across all codes) of 0.79. The team members independently coded the remaining 24 PO transcripts meeting weekly to discuss any questions and issues encountered during coding and to update the codebook to further define codes and inclusion criteria. They also worked with the senior researchers to discuss any unresolved questions or conflicts. The coding was spot checked to ensure consistency and updated to account for inductively derived codes



## Survey Questions Regarding Nudges

### SECTION 4: ACTIONS TO INFLUENCE PHYSICIAN DECISIONS

29. Does your physician organization use any of the following approaches to nudge or implicitly influence the choices your PCP and/or specialty physicians make?

| YES                      | NO                       | Type of Approach Used   |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | <b>29a. Templates</b> (e.g., order-sets, checklists) to influence physician choices for certain clinical situations |

| YES                      | NO                       | Type of Approach Used   |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | <b>29b. Altered order entry</b> to influence physician decisions regarding <b>prescribing</b> (e.g., generic vs. brand, preferred medication classes). <i>If YES, which of the following strategies below do you use?</i> |
| <input type="checkbox"/> | <input type="checkbox"/> | i. Making <b>preferred medication options easier to access or select</b> (e.g., auto-complete, defaulted options, preferred lists or formularies)   |
| <input type="checkbox"/> | <input type="checkbox"/> | ii. Purposeful <b>ordering of available options</b> among medications (e.g., more preferred medications listed higher than less preferred)  |
| <input type="checkbox"/> | <input type="checkbox"/> | iii. Making <b>less preferred medications options harder to access or select</b> (e.g., Partitioning or de-emphasizing)   |
| <input type="checkbox"/> | <input type="checkbox"/> | iv. Prompts <b>suggesting alternatives</b> when a when a less preferred medication option is selected   |
| <input type="checkbox"/> | <input type="checkbox"/> | v. Requiring <b>exceptions or additional review</b> before ordering less preferred medication options (e.g., antibiotic stewardship approval, pharmacist review)  |
| <input type="checkbox"/> | <input type="checkbox"/> | vi. Other, Specify _____  |
|                          |                          |   |

| YES                      | NO                       | Type of Approach Used   |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | <b>29c. Altered order entry</b> to influence physician decision regarding <b>tests, procedures, and/or referrals</b> . <i>If YES, which of the following strategies below do you use?</i>           |
| <input type="checkbox"/> | <input type="checkbox"/> | i. Making <b>preferred test, procedure, or referral options easier to access or select</b> (e.g., auto-complete, defaulted options, preferred lists)  |
| <input type="checkbox"/> | <input type="checkbox"/> | ii. Purposeful <b>ordering of available options</b> among tests, procedures, or referrals (e.g., more preferred medications listed higher than less preferred)                                      |
| <input type="checkbox"/> | <input type="checkbox"/> | iii. Making <b>less preferred test, procedure, or referral options harder to access or select</b> (e.g., partitioning or de-emphasizing)  |
| <input type="checkbox"/> | <input type="checkbox"/> | iv. Prompts <b>suggesting alternatives</b> when a when a less preferred test, procedure, or referral options option is selected   |
| <input type="checkbox"/> | <input type="checkbox"/> | v. Requiring <b>exceptions or additional review</b> before ordering less preferred tests, procedures, or referrals options (e.g., radiologist order review, specialist order or referral screening) |
| <input type="checkbox"/> | <input type="checkbox"/> | vi. Other, Specify _____  |

| YES                      | NO                       | Type of Approach Used   |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | <b>29d. Patient action lists</b> that suggest items that are due for each patient |

| YES                      | NO                       | Type of Approach Used  |
|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | <b>29e.</b> Offer physicians the option to <b>make a commitment to a preferred course of action</b> for a given clinical situation (e.g., generic or appropriate prescribing, high-value care options). <i>If YES, is that commitment:</i> |
| <input type="checkbox"/> | <input type="checkbox"/> | i. Public (i.e., visible to peers and patients)  |
| <input type="checkbox"/> | <input type="checkbox"/> | ii. Private (i.e., known only to the physician themselves)   |

| YES                      | NO                       | Type of Approach Used   |
|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | <b>29f.</b> Other techniques to “nudge” or implicitly influence physician choices<br>Please describe: _____ |

## SECTION 5: EFFECTIVENESS AND ALIGNMENT

*We want to understand your perception of the effectiveness of your incentives to frontline physicians, and the alignment of these incentives with the goals of your organization.*

30. To what extent do you agree that the following mechanisms are effective at improving the performance of your frontline physicians?

| Mechanism  | Strongly Disagree        | Disagree                 | Neutral                  | Agree                    | Strongly Agree           |
|--|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Financial incentives   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Public reporting of individual physician performance   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Unblinded individual performance feedback and peer comparisons   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Blinded individual performance feedback and peer comparisons   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Individual reporting only (no peer comparisons)  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Awards or recognition within your physician organization   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Nudges to influence provider choice/action (e.g., default or pre-selected options for tests or medications in the EHR) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| System level assistance (e.g., information systems investment, care managers, chronic care clinics)                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

### Follow-up Qualitative Interview Nudge Questions

#### A. Nudges

A key reason why physician organizations are using incentives and feedback reports is that they hope to change the behavior of frontline physicians—to deliver better quality, to generate more revenue, and so on. Do you agree? (YES/NO)

So let's talk about another approach to changing frontline physician behavior—and that is the use of **behavioral nudges**.

- A nudge, as we will use the term, is any aspect of the way choices are presented to physicians that alters decision-making in a predictable way, *but* doesn't forbid any options or penalize for any choices.

- The goal of a nudge is to influence decision making
  - Example: your company setting up a default “opt-in” for a 401K retirement plan to make it easier for employees to save
- Nudges can work in several ways: “opt in” vs. “opt out,” defaults, checklists, social norms, commitment or attestations, reframing options, etc.
- Nudges modify a situation and make it:
  - Easier to do something that is desired—such as providing evidence-based care--or
  - Harder to do something that not desired—like providing low-value care.

1. Is there anything your physician organization is doing to “influence” your physicians’ practice environment --to “nudge” or implicitly influence the choices your physicians make to improve their performance? (YES/NO)
  - a. If yes, please describe where you are implementing behavioral nudges.

Let’s go back and talk about your responses to the survey.

- Question 29 on the survey you completed was our attempt to determine if your organization is using any behavioral nudges.
  - We asked about several types of possible nudges including:
    - use of order sets and checklists,
    - changing the default option in your EHR for medications or tests/procedures,
    - changing the ordering of choices so that the preferred option is first, or having physicians commit to a preferred course of action.

Based on your responses to the survey, you are using:

**[If reported using template]:**

[For all questions – if reported NO]:Have you considered taking such an approach? If so, why haven’t you implemented it?

2. I understand that your organization uses **templates (e.g., order-sets or checklists)**.
  - a. Can you describe the specific templates you use? (*prompts: What actions or decisions are the templates seeking to encourage? How strong is the nudge--is it the default/required or more of a suggestion?*)

[If reported altered order entry for prescribing]:

3. I understand that your organization uses **altered order entry to influence physician decisions regarding prescribing**.
  - a. Can you describe the specific approaches to altering prescribing that you use? (*Probes: order of choices, prompts for alternatives, utilization review*)

*(prompts: What actions or decisions are the templates seeking to encourage?  
How strong is the nudge--is it the default/required or more of a suggestion?)*

[If reported altered order entry for tests/procedures/referrals]:

4. I understand that your organization uses **altered order entry to influence physician decisions regarding tests, procedures, and/or referrals.**
  - a. Can you describe the specific approaches to altering decisions about tests/procedures/referrals that you use? (*Probes: order of choices, prompts for alternatives, utilization review*)  
*(prompts: What actions or decisions are the templates seeking to encourage?  
How strong is the nudge--is it the default/required or more of a suggestion?)*

[If reported patient action lists]:

5. I understand that your organization **uses patient action lists to prompt physicians.**
  - a. Can you describe what specific actions are being prompted? (*probe: is this for primary care or specialty care?*)  
*(prompts: What actions or decisions are the templates seeking to encourage?  
How strong is the nudge--is it the default/required or more of a suggestion?)*

[If reported commitments]:

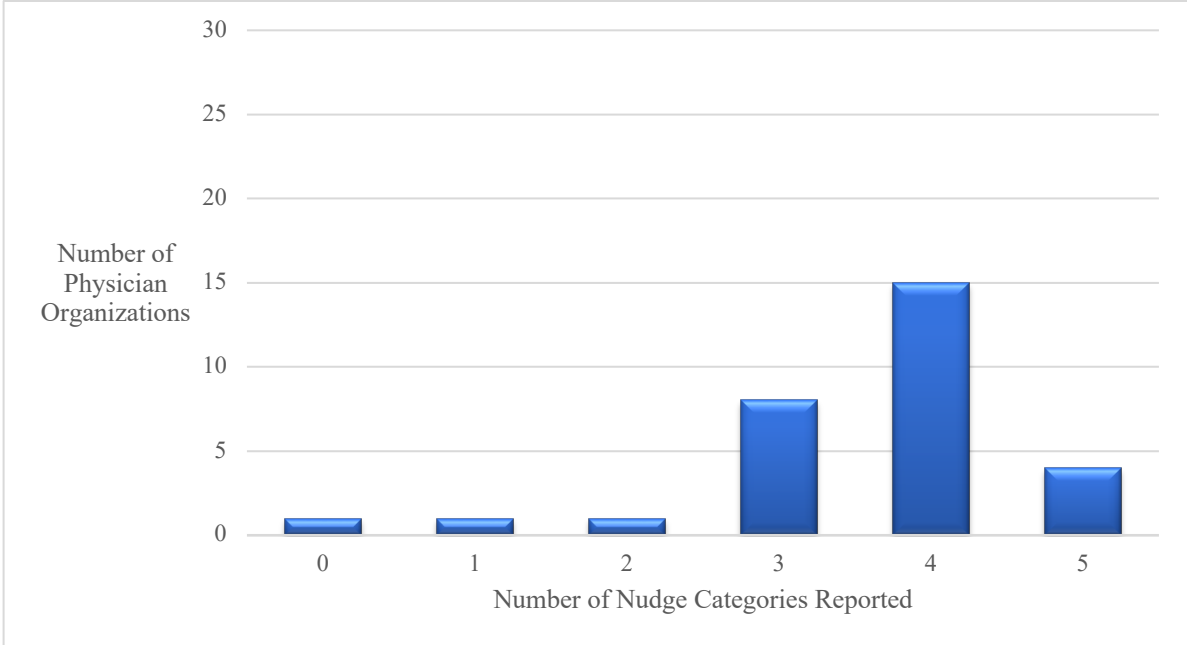
6. I understand that your organization asks physicians to **make a commitment to a preferred course of action.**
  - a. Can you describe the specific commitments you use and what actions they seek to affect? (*prompts: What actions or decisions are the templates seeking to encourage? How strong is the nudge--is it the default/required or more of a suggestion?*)
  
7. Can you think of any other things **your organization is doing to “influence” your physicians’ practice environment?** Anything we might have missed?

**eAppendix Table.** Physician Organization Leaders' Ratings of the Effectiveness of Different Mechanisms in Improving Physician Performance

| <b>"To what extent do you agree that the following mechanisms are effective at improving the performance of your frontline physicians?"</b> | <b>Strongly Disagree or Disagree</b> | <b>Neither agree nor disagree</b> | <b>Strongly Agree or Agree</b> |
|---|--------------------------------------|-----------------------------------|--------------------------------|
| Mechanism   | n (%)                                | n (%)                             | n (%)                          |
| System level assistance (e.g., information systems investment, care managers, chronic care clinics)   | 0<br>(0%)                            | 4<br>(13%)                        | 26<br>(87%)                    |
| Unblinded individual performance feedback and peer comparisons  | 0<br>(0%)                            | 4<br>(14%)                        | 25<br>(86%)                    |
| Financial Incentives  | 0<br>(0%)                            | 5<br>(17%)                        | 25<br>(83%)                    |
| Public reporting of individual physician performance  | 0<br>(0%)                            | 6<br>(20%)                        | 24<br>(80%)                    |
| Nudge to influence provider choice/action (e.g., default or pre-selected options for tests or medications in the EHR)                       | 1<br>(3%)                            | 5<br>(17%)                        | 24<br>(80%)                    |
| Blinded individual performance feedback and peer comparisons  | 4<br>(13%)                           | 11<br>(4%)                        | 15<br>(50%)                    |
| Individual reporting only (no peer comparisons)   | 8<br>(27%)                           | 6<br>(27%)                        | 16<br>(53%)                    |
| Awards or recognition within your physician organization  | 0<br>(0%)                            | 10<br>(33%)                       | 20<br>(67%)                    |

Source: Authors' analysis of primary data collected by the study team. N=30 POs.

**eAppendix Figure.** Number of Nudge Categories Reported Used (n=30 Physician Organizations)



Source: Authors' analysis of primary data collected by the study team