outcomes in those at high risk, given their proven value in multidisciplinary interventions for those with established MSP [15] and evidence suggesting that they may also have a role in preventing post-traumatic MSP [16]. Finally, a quarter of participants seen in the ED after MVC and discharged to home who were at low risk of chronic MSP still utilized health care for MVC-related difficulties. This finding may also suggests that opportunities may exist to reduce unnecessary post-MVC care.

Together the above data suggest a need for improvements in the process by which ED physicians and case managers make recommendations and referrals for MVC patients in the ED who are discharged home. Future research should investigate whether a stratified-care approach to post-MVC MSP care is clinically- and cost-effective. For example, patients at high risk of chronic MSP may have improved outcomes with referral and completion of physical, cognitive-behavioral, or multidisciplinary treatment programs. In comparison, patients at low risk for MSP may benefit from cost-effective over-the-counter pain management and additional education about the natural course of post-injury MSP with avoidance of unnecessary care.

## Funding

Research reported in this publication was supported by the National Institute of Arthritis and Musculoskeletal and Skin Diseases of the National Institutes of Health under Award Number 5-R01-AR056328. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

**Table 1**
Health care utilization by week 6, stratified by risk for chronic pain.

| | All | Baseline risk for chronic pain | | |
|---|---|---|---|---|
| | | Low risk | Medium risk | High risk |
| | n = 793 (%) | n = 265 (%) | n = 264 (%) | n = 264 (%) |
| Visits to health care providers | 422 (53.2) | 102 (38.4) | 137 (51.9) | 183 (69.0) |
| Primary care | 288 (36.3) | 75 (28.3) | 98 (37.1) | 115 (43.6) |
| Family physician | 261 (32.9) | 73 (27.5) | 86 (32.6) | 102 (38.6) |
| Internal medicine | 29 (3.7) | 2 (0.8) | 12 (4.5) | 15 (5.7) |
| Manual therapy | 231 (29.6) | 42 (15.9) | 66 (25.0) | 123 (47.7) |
| Physical therapist | 144 (18.2) | 22 (8.3) | 36 (13.6) | 86 (32.6) |
| Chiropractor | 110 (13.9) | 23 (8.7) | 36 (13.6) | 51 (19.3) |
| Massage/manual therapist | 41 (5.2) | 8 (3.0) | 10 (3.8) | 23 (8.7) |
| Medical specialist | 84 (10.6) | 9 (3.4) | 26 (9.8) | 49 (18.6) |
| Spine surgeon | 63 (7.9) | 6 (2.3) | 19 (7.1) | 38 (14.4) |
| Neurologist | 28 (3.5) | 2 (0.8) | 11 (4.2) | 15 (5.7) |
| Other | 3 (0.4) | 1 (0.4) | 0 (0.0) | 2 (0.8) |
| Mental health | 24 (3.0) | 3 (1.1) | 4 (1.5) | 17 (6.4) |
| Psychiatrist | 12 (1.5) | 2 (0.8) | 2 (0.8) | 8 (3.0) |
| Psychologist | 11 (1.3) | 0 (0.0) | 2 (0.8) | 9 (3.4) |
| Social worker | 5 (0.6) | 1 (0.4) | 0 (0.0) | 4 (1.5) |
| Acupuncturist | 9 (1.1) | 2 (0.8) | 5 (1.9) | 2 (0.8) |

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6 July 2018
https://doi.org/10.1016/j.ajem.2018.07.019

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## Emergency medicine stakeholder perspectives on value-based alternative payment models: A qualitative study

Over the past decade, there has been great focus on reducing costs and improving quality in healthcare. One of the major pushes has been the move from traditional fee-for-service (FFS) payments to “alternative payment models” (APM). Examples of APMs include capitation (a per-patient per month fee), bundled payments for specific conditions (i.e. for hip fracture),

and gain-sharing models such as accountable care organizations (ACO). APMs have been a challenge to apply in some settings such as emergency departments (ED), where visits are episodic, providers do not control care demands, and operate under the Emergency Medicine Treatment and Active Labor Act (EMTALA) with is a requirement to medically screen every patient [1-3]. These issues make it difficult for the ED to control costs. Nevertheless, EDs are responsible admission decisions which are highly variable across and within EDs, and have major cost implications [4-8]. A recent study surveyed existing ACOs and found that their focus was mostly on enhancing primary care and increasing ED alternatives, rather than engaging with EDs or ED physicians [9]. In this paper, we explore attitudes of emergency medicine and population health leaders on ED APMs.

We conducted a qualitative study with emergency medicine and population health leaders in summer 2017. Each leader was interviewed about ED APMs, their feasibility, and future directions. Interviews were recorded and transcribed verbatim [10]. Transcript codes were analyzed with thematic analysis using NVIVO 11 software. We assessed inter-rater reliability and found >90% agreement on codes. The study was approved by the Institutional Review Board at George Washington University.

**Table 1**
Summary of key themes from interviews about effectiveness of alternative payment models (APM).

| Themes | n (%) | Quotes |
|---|---|---|
| Type of APMs discussed or used | 151 (37%) | "Number one is ED disposition planning, focused on the patient's disposition post discharge from an emergency medicine visit. APM number two is developing case rates for ED services. APM number three is population management for ambulatory acute care focused on skilled nursing facility patients that are transferred to the ED, initially." |
| Type of APM metrics within EM | 36 (9%) | "…showing a hospital system how they vary from another one with regards to admission rates or post discharge events going out over a 30 day period." |
| Improved quality of care | 8 (2%) | "I think we are saving lives. We are getting better quality." |
| No change or adverse impact on quality of care | 15 (4%) | "Significant impact on quality? I don't think there is a lot of hard evidence." |
| Increase in cost or no change | 4 (<1%) | "I think the cost savings are still being {pause} you know there's still doubt that it's sustainable." |
| Decreased cost | 8 (2%) | "They seem to be starting to bend the cost curve but, a little bit." |
| Quality of metrics | 92 (23%) | "Some of the most important EM outcomes and processes are difficult or expensive to measure in a statistically valid and uniform way across all providers and facilities." |
| Able to change physician behaviors | 24 (6%) | "There is always the common wisdom that new ideas come in, changes in practice, and it takes years for it to be widespread in terms of you know, the majority of physicians changing their behavior. You know I think the other common wisdom is you start showing folks data at a hospital level and you found out you were the outlier, most people will respond to that because they don't want to be an outlier." |
| Unable to change physician behaviors | 20 (5%) | "… an ED doctor might get $5, $15, or $30. So that is not enough that it is going to sway your practice." |
| Financial incentives used to change physician behavior | 45 (11%) | "Doctors respond much better to taking away income, than giving them more income." |

**Table 2**
Summary of key themes from interviews about feasibility of implementation of alternative payment models (APM).

| Themes | n (%) | Quotes |
|---|---|---|
| General discussion of how setting impacts APM feasibility | 58 (9%) | "Well I think it is more of a function that population is one factor, what the socioeconomics are, what the utilization currently is, what the culture of medicine is in that area, and then you know, not every hospital is going to be interested in this level of integration." |
| | | "All your doing is basically shutting the door to the patient for the medical care that they need. So I think there will have to be, over time, a menu of alternative payment models and some will work in rural settings, some will work in an urban setting, some will work in an academic setting" |
| Impact of resource availability or cost on APM implementation | 55 (8%) | "Just the infrastructure and the data analysis that you need is just enormous." |
| Process of creating APM quality measures | 77 (12%) | "…tremendous opportunity to either close the gap, or to develop additional quality measures that are much more reflective of the value you've delivered, not just the quality measure." |
| Process of creating APMs | 43 (6%) | "…you really got to create it based on your own resources, and then see if your implementation works." |
| Stakeholder perceptions of EM | 76 (11%) | "…they were focused elsewhere and not on the emergency department." |
| | | "…we still shouldn't be seen as the evil ones, that we're the problem." |
| Alignment of incentives between stakeholders of EM | 155 (23%) | "But we are at a very tumultuous transformation between a utilization driven incentive model that rewards, and I'm going to shift to emergency medicine, that rewards utilization, and has essentially no alignment. Each of the involved parties is doing what they do to optimize income, and it's very, in my opinion, somewhat dysfunctional because it leads to behavior that is not what you and I would design for population if we were looking solely at outcomes and now income." |
| Emergency physician or society involvement in stakeholder conversations about APMs | 91 (14%) | "So one of the trends I'm starting to see, but it's very very nascent, is as hospital service contracts are being renewed for non-employed groups, the group has to agree to participate typically with best efforts in general future quality programs so that as those payer relationships with the hospitals evolve over time and start to relate to cost and the real detail of alternative payment models, the ED group will ultimately be able to get in line." |
| Structural barriers to APMs (e.g. EMR, payment systems, etc.) | 82 (12%) | "Of course there's the IT infrastructure, there's so been so much written about that, but even in very sophisticated health systems that are now engaging specialists they've got real challenges due to disparate electronic health information." |
| Government or legal policies regarding APMs | 31 (5%) | "It appears that regime change at CMS will slow the pace of APM development and implementation under MACRA and reduce or eliminate innovation at the CMMI level. GOP are more likely to encourage innovation among plans contracting for Medicare populations via MA and state-level innovation by Managed Medicaid contractors." |

In 12 interviews, major themes were 1) effectiveness of ED APMs (25%), 2) feasibility (45%), and 3) perspectives/trends in APMs (30%). Participants mentioned the three American College of Emergency Physicians (ACEP) APMs in development: 1) ED disposition planning, 2) ED case rates, and 3) population management for skill nursing facilities. Overall, there were mixed views on these and other ED value-based models. While many believed there were potential areas for cost reduction in EDs, others felt that ED APMs would mainly enforce documentation and would not impact quality. Many thought APMs would increase costs because of administrative burden, and that financial incentives were insufficient to change behavior. ED APM quality metrics were mentioned, but the predominant view of these metrics was negative because they focused on process over outcome. (Table 1) Participants pointed to several barriers to ED APM feasibility: the heterogeneity of the specialty, lack of stakeholder alignment, and lack of ED involvement. (Table 2) The future outlook for ED APMs was mixed, but many thought value-based models would eventually change practice in the ED and other settings. Main concerns with APMs were loss of autonomy and compensation reductions; however, transitioning to value-based care was viewed as an opportunity to transform the specialty. (Table 3).

Overall, opinions on ED APMs were mixed, with agreement on opportunities to reduce costs but concerns over implementation, administrative burden, and insufficient income at stake. For the most part ED leaders were minimally involved in APMs: ACO leadership in their experiences was mostly the domain of primary care and non-physician administrators. In addition, there were concerns how EDs could be held accountable for costs especially if they were only involved briefly.

Administering APMs requires collaboration and economies of scale–which, depending on local practice – may be a challenge. Kaiser-Permanente was mentioned as an effective APM in acute care under a capitated risk-sharing model [11]. Kaiser is successful through its size and scale to invest in patient-facing interfaces to promote value (i.e. telemedicine), systems to centralize information, and mechanisms to coordinate care. However, implementing the Kaiser model broadly would be challenged by the competing roles of the ED to serve the safety net and comply with EMTALA [12].

Participants also identified ways to make future ED APMs successful, and key areas for development. These included: 1) incorporating outcome measures rather than process measures, 2) utilizing performance sharing to influence physician behavior and manage incentives, and 3) adjusting APM structure based on each ED's individual circumstances. In addition, there was a consensus for greater ED involvement in APM development. Yet, despite identified barriers, most believed that APMs in EM were likely inevitable even with the relative slowdown with the Trump administration. This suggests emergency medicine should remain prepared for the transition to value-based care.

This study had limitations, as a small convenience sample in an evolving area, where models as well as opinions may change rapidly. In addition, during summer 2017 when the interviews were conducted, ED APMs for the most part a conceptual rather than real construct, so perceptions were largely speculative. In conclusion, there were mixed views on ED APMs, yet good consensus that EDs are an important player and many opportunities exist to improve delivery and reduce cost.

**Table 3**
Summary of key themes from interviews about perspective and trends of alternative payment models (APM).

| Themes | n (%) | Quotes |
|---|---|---|
| Physician concerns about income and reimbursement | 48 (12%) | "Well the issue that we have is going to be that as one of the younger specialties, we kind of got squeezed out when it comes to reimbursement." |
| Opportunity for specialty transformation | 82 (20%) | "…use of post-acute care strategies that are generated from the emergency departments, that's a huge innovation that we got going right now" |
| | | "…we need to find a way to make sure that we're engaging the people who are seeing these patients on a long term basis when we're dealing with our episodic care." |
| EM physician ability to control patient admissions and related costs | 39 (10%) | "We demonstrated with analysis that we avoid admissions, we avoid revisits to the emergency department, we avoid ancillary utilization on those avoided visits, and those are all quantifiable costs." |
| EM physician ability to prevent inappropriate utilization of the ED and related costs | 39 (10%) | "…a bundled payment or a global fee or capitation, whichever name we're going to use, there's solid evidence that that does in fact reduce inappropriate emergency room use." |
| Factors that limit ED control of costs | 27 (7%) | "I strongly believe that the emergency physician is a passive recipient of a system failure elsewhere. It's the default option when nothing else exists." |
| APMs require further adjustments before implementation | 28 (7%) | "…that's feasible but it does require integration that doesn't exist in many many many hospitals." |
| Trends in APMs reveal slow process of implementation | 37 (9%) | "But there is a lot of talk, and a lot of prep, and there is actually not that much being done." |
| | | "…it's going to take years and years and years." |
| Doubtful or pessimistic view on the future of APMs | 56 (14%) | "APMs. I think they are going to be inordinately difficult to put in place." |
| | | "I am pretty pessimistic about them quite frankly." |
| Inevitable or optimistic view on the future of APMs | 53 (13%) | "My perspective on APMs as an extension of other risk-bearing models, be they accountable care organizations, bundled payment models, patient centered medical homes, is where the future is, and I believe it's where the future in reimbursement is going to be." |

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1 July 2018

https://doi.org/10.1016/j.ajem.2018.07.020

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## Relevance of opioid guidelines in the emergency room (ROGER)★

The increased use of opioid pain medications in North America in the last 2 decades has given rise an epidemic of addictions, overdoses and deaths, to which both the US and Canadian governments have enacted strategies to help combat these crises [1-3]. While these strategies develop multiple interventions to curb opioid use, a common target is to reduce physician opioid prescribing. Many patients may receive their first dose of opioid in the Emergency Department (ED), and recent studies show that there has been a steady increase in opioid prescribing in US EDs to adults (relative increase of 49% from 2001 to 2010) [4, 5]. Evolving evidence suggests that ED opioid prescribing can lead to long term opioid use/dependency, although preliminary results are conflicting [6-10]. A recent review examining ED opioid prescribing outcomes indicates that approximately 10% are associated with indicators of inappropriate prescribing, 10% may be diverted, 42% misused, and 1.8% may cause death [11].

International clinical practice guidelines (CPGs) regarding opioid prescribing have been previously shown to be generally congruent regarding patient assessment, risk stratification, urine drug screening and opioid prescribing protocols [12, 13]. A key limitation of these international CPGs remains the relative paucity of evidence-based recommendations to guide ED prescribing practices. The goal of this study was to review these international CPGs for emergency medicine (EM)-relevant recommendations, involvement in EM authors, and/or vetting by EM practice organizations (physicians, nursing, pre-hospital care).

Prior search strategies for relevant guidelines were reproduced and updated to include the most recent guideline iteration [12, 13]. Manual searches of international pain society websites and guideline repositories (e.g. Guideline International Network, National Guideline Clearinghouse, etc.) were also completed. Guidelines were excluded if they addressed opioid prescribing at sub-national levels (e.g. state/province, region, city, etc.), as it was felt that these were more locally focused, and would not offer generalizable guidance for EM practice. Included guidelines were evaluated for analytical methods used to evaluate supporting evidence and framing CPG recommendations, inclusion of EM authors (with reporting of conflict of interest), and involvement of EM stakeholders in final draft evaluations (physicians, nurses, prehospital care).

A total of 16 guidelines were included for analysis. The guidelines included in this review, and corresponding evidence evaluation/recommendation frameworks are listed in Table 1. A variety of different evidence evaluation systems and recommendation formulation frameworks were used by author groups. Four of 16 included CPGs did not report methods used, which raises questions about the validity of evidence analysis and recommendations suggested. The results of the CPG analyses are summarized in Table 2. Two CPGs made recommendations relevant to EM opioid prescribing, albeit with weak supporting evidence (based on rating frameworks used). Three CPGs included EM physician authors, including one with a potential conflict of interest. Finally, there is no reported involvement with any EM stakeholders (physicians, nurses, prehospital) in reviewing draft versions prior to final publication.

Not all "guidelines" conformed to uniform construction and reporting standards, so they were not amenable to quality assessment using current rating tools (e.g. Institute of Medicine, AGREE-II instrument) [14].

Guidelines can best inform clinical practice when the recommendations and clinical settings are specified [14]. To that end, it is important to have appropriate inclusion & exclusion criteria that define the proper application of guideline recommendations within the proper scope of

**Table 1**
International Opioid CPGs included in study.

| CPG (author group, publication year) | Frameworks for reviewing evidence and formulating recommendations[a] | |
|---|---|---|
| | Evidence review | Recommendations |
| Latin America (2017) | N/R | N/R |
| US Centre for Disease Control (2016) | GRADE | GRADE |
| Australian & New Zealand College of Anaesthetists (ANZCA 2015) | N/R | N/R |
| Scottish Intercollegiate Guideline Network (SIGN) | SIGN 50 | SIGN 50 |
| Institute for Clinical Scientific Improvement (ICSI 2016) | ICSI evidence grading system | ICSI evidence grading system |
| ICSI 2013 | ICSI evidence grading system | ICSI evidence grading system |
| Pain Association of Singapore Task Force (2013) | N/R | N/R |
| American Society of Interventional Pain Physicians (ASIPP 2017) | Level I–IV (defined within CPG) | Strong/mod/weak |
| ASIPP (2013) | IOM, USPTF criteria | N/R |
| British Pain Society (2010) | N/R | N/R |
| Canadian Opioid Update (2017) | GRADE | GRADE |
| Canadian National Opioid Users Group Guideline (NOUGG 2010) | CTFPHC | CTFPHC |
| US Veterans Administration/Dept of Defence (US VA/DoD 2017) | GRADE | GRADE |
| US VA/DoD (2010) | USPSTF | USPSTF |
| American Society of Anaesthesiologists Task Force/American Society of Regional Anaesthesia & Pain Medicine (AAS ASRA 2010) | Expert consensus | Expert consensus |
| American Pain Society/American Academy of Pain Management (APS AAPM 2009) | GRADE | GRADE |

[a] N/R = not reported, GRADE = grading of recommendations, assessment, development and evaluation, USPSTF = US preventive services task force, IOM = institute of medicine, CTFPHC = Canadian task force on preventive health care.

☆ Presented at the Canadian Association of Emergency Physicians Annual Conference (May 2018).