can give the exact PaO_2 value, but is a difficult procedure in prehospital setting; as the authors rightly mention while raising the issue of the need of ABG in pre-hospital care by their study. A tightly managed PaO_2 to minimize hyperoxemia is also justified in many of the critically ill situations [7]. But, we feel that the main question is whether we can rigidly control hyperoxemic conditions or not as suggested by Jouffroy R et al. data, or what is the outcome of doing so in such pre-hospital patients requiring mechanical ventilation? More prospective, randomized study will be required to answer this question as well as confirm the findings of the present study.

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Authors declare no conflict of interest.

Authors' contributions

All the authors have contributed in literature search, manuscript preparation and editing.

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Health care utilization following motor vehicle collision is poorly stratified by chronic pain risk: Lessons from the CRASH study☆

Over four million patients present to U.S. Emergency Departments (EDs) annually with acute musculoskeletal pain (MSP) following a motor vehicle collision (MVC) [1]. Epidemiologic studies indicate that more than 30% of MVC patients discharged home after ED evaluation still experience significant MSP six weeks post-MVC [2]. Interventions are available to prevent [3-5] and treat [6-8] chronic MSP, including analgesics, physical rehabilitation, psychotherapy, and multidisciplinary approaches. However, it is unknown if patients utilize health care services in the weeks following MVC ED visit. Low rates of health utilization among patients at high risk of chronic MSP, or non-trivial rates among those at low risk of chronic MSP, would suggest a need for improved triaging of post-MVC care as stratified approaches to MSP management may improve outcomes and reduce costs [9].

We evaluated health care utilization in the six weeks following MVC stratified by risk for chronic MSP (health outcomes after six weeks are relatively stable) [10-12]. The data were from a large multi-center prospective cohort study of non-Hispanic white adults (18–65 years-old) who presented to an ED within 24 h of a MVC and were subsequently discharged home. This cohort, which was followed for one year post-MVC, is predominantly young (mean = 36-years old; *SD* = 13), female (61%), and with at least a high school education (76%). Participants were enrolled from eight EDs in four states between February 2009 and October 2011. Health care utilization for MVC-related problems was assessed via self-report survey six weeks after MVC. Data were available from 793 patients. Details of the study methodology are described elsewhere [2, 13]. The study was approved by the Institutional Review Board at each site; all participants provided written informed consent.

Individual-level risk of chronic MSP was calculated using a previously validated prediction tool [14] based on 26 risk factors (assessed in the ED) for chronic axial MSP. Chronic MSP was defined as self-reported MVC-related MSP of moderate to severe intensity in at least one body region (neck, shoulders, upper back, and lower back) at the 6 week follow-up *and* at 6 *or* 12 month follow-up. Our participants were divided into tertiles of low, medium, or high risk for chronic MSP based on the calculated risk score. Roughly three-quarters (74%) of participants in the high risk tertile ultimately developed chronic MSP (positive predictive value) compared to 40% of medium risk and 20% of low risk participants.

A larger proportion of participants at high risk for chronic MSP had a visit to at least one provider (69%) compared to medium (52%) and low risk (38%) participants (Table 1). Manual therapy was the most common type of health care utilization by high risk participants (48%), with roughly one-third receiving physical therapy (33%). Primary care utilization was slightly less common (43%) than manual therapy. Visits to primary care providers were the most common utilization among medium (37%) and low risk (28%) participants. Very few (3%) low risk participants utilized medical specialists (i.e., spinal surgeons or neurologist). Only 1 in 20 (6%) high risk participants and 1–2% of medium and low risk participants utilized mental health services.

Several conclusions may be drawn from the above findings. First, the fact that less than half of high risk patients received appropriate MSP health services in the weeks following MVC suggests that there is great opportunity to improve access to care for the secondary prevention [3-5] or treatment of chronic MSP [6-8]. This is particularly the case, given the critical need for expert early care to avoid improper early treatment of chronic MSP and/or MSP development in the current opioid epidemic. Second, the very low rates of mental health treatment observed suggest that improving early access to mental health services may provide an opportunity to prevent or improve chronic MSP

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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.

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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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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),