

## Defensive medicine: It is time to finally slow down an epidemic

Sandro Vento, Francesca Cainelli, Alfredo Vallone

Sandro Vento, Francesca Cainelli, Department of Medicine, Nazarbayev University, Astana 010000, Kazakhstan

Sandro Vento, University Medical Center, Astana 010000, Kazakhstan

Alfredo Vallone, Infectious Diseases Unit, G. Jazzolino Hospital, Vibo Valentia 89900, Italy

ORCID numbers: Sandro Vento (0000-0003-0084-4062); Francesca Cainelli (0000-0003-1838-3946); Alfredo Vallone (0000-0002-2156-1646).

**Author contributions:** Vento S, Cainelli F and Vallone A conceived the study and drafted the manuscript; all authors approved the final version of the article.

**Conflict-of-interest statement:** The authors have no conflict of interest to declare.

**Open-Access:** This article is an open-access article, which was selected by an in-house editor and fully peer-reviewed by external reviewers. It is distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>

**Manuscript source:** Invited manuscript

**Correspondence to:** Sandro Vento, MD, Full Professor, Department of Medicine, Nazarbayev University, 5/1 Kerey and Zhanibek Khans Street, Astana 010000, Kazakhstan. [sandro.vento@nu.edu.kz](mailto:sandro.vento@nu.edu.kz)  
Telephone: +7-7172-694654

Received: June 4, 2018

Peer-review started: June 5, 2018

First decision: June 14, 2018

Revised: July 5, 2018

Accepted: July 15, 2018

Article in press: July 16, 2018

Published online: October 6, 2018

### Abstract

Defensive medicine is widespread and practiced the world over, with serious consequences for patients, doctors, and healthcare costs. Even students and residents are exposed to defensive medicine practices and taught to take malpractice liability into consideration when making clinical decisions. Defensive medicine is generally thought to stem from physicians' perception that they can easily be sued by patients or their relatives who seek compensation for presumed medical errors. However, in our view the growth of defensive medicine should be seen in the context of larger changes in the conception of medicine that have taken place in the last few decades, undermining the patient-physician trust, which has traditionally been the main source of professional satisfaction for physicians. These changes include the following: time directly spent with patients has been overtaken by time devoted to electronic health records and desk work; family doctors have played a progressively less central role; clinical reasoning is being replaced by guidelines and algorithms; the public at large and a number of young physicians tend to believe that medicine is a perfect science rather than an imperfect art, as it continues to be; and modern societies do not tolerate the inevitable morbidity and mortality. To finally reduce the increasing defensive behavior of doctors around the world, the decriminalization of medical errors and the assurance that they can be dealt with in civil courts or by medical organizations in all countries could help but it would not suffice. Physicians and surgeons should be allowed to spend the time they need with their patients and should give clinical reasoning the importance it deserves. The institutions should support the doctors who have experienced adverse patient events, and the media should stop reporting with excessive evidence presumed medical errors and subject physicians to "public trials" before they are eventually judged in court.

**Key words:** Adverse event; Clinical reasoning; Defensive medicine; Doctor-patient relationship; Healthcare cost; Medical education; Medical error

© **The Author(s) 2018.** Published by Baishideng Publishing Group Inc. All rights reserved.

**Core tip:** The widespread practice of defensive medicine has negative consequences for patients, doctors, and healthcare costs. The growth of defensive medicine must be seen in the context of the changes in the conception of medicine, which have occurred in the last few decades and have undermined the patient–physician trust. To reduce the practice of defensive medicine, decriminalization of medical errors, increased time directly spent with patients, reaffirmation of the importance of clinical reasoning, and institutional support to doctors who have experienced adverse patient events are essential.

Vento S, Cainelli F, Vallone A. Defensive medicine: It is time to finally slow down an epidemic. *World J Clin Cases* 2018; 6(11): 000-000 Available from: URL: <http://www.wjgnet.com/2307-8960/full/v6/i11/000.htm> DOI: <http://dx.doi.org/10.12998/wjcc.v6.i11.000>

## INTRODUCTION

Defensive medicine has been practiced for decades<sup>[1]</sup> and spread to countries the world over to become an epidemic<sup>[2-5]</sup>, causing unnecessary hospitalizations, tests, invasive procedures, drug prescriptions, consultations with other physicians, avoidance of high risk patients, and congested waiting lists. This can cause serious consequences. For example, in a patient with an infection a physician practicing defensive medicine may prolong antibiotic duration, prescribe unnecessary broad-spectrum antibiotics or combinations of agents, or prescribe unnecessary antibiotic treatments<sup>[6,7]</sup>, which may contribute to the alarming spread of antibiotic resistance. Even students and residents frequently encounter defensive medicine practices and are in various instances taught to take malpractice liability into consideration when making clinical decisions<sup>[8]</sup>. Medicolegal systems tend to censure alleged errors of omission much more often than any other type of fault<sup>[9]</sup>, thus incentivizing a continuously increasing and excessive number of diagnostic investigations as a strategy for reducing legal risk<sup>[10]</sup>. Indeed it was observed that the United States had created the “perfect storm” for overutilization of healthcare<sup>[11]</sup>, and that there is “an unjustified enthusiasm for treatment on the part of both doctors and patients”<sup>[12,13]</sup>. Hence, the financial burden related to defensive medicine is considerable. The US medical liability system costs \$55.6 billion annually, and the contribution of defensive medicine is over 82% (\$45 billion)<sup>[14]</sup>, and in Italy the cost of defensive medicine has been estimated to be around 10–12 billion euro/year<sup>[15]</sup>. Indeed, higher resource use by physicians is associated with fewer malpractice claims<sup>[16]</sup>.

Does defensive medicine solely derive from physicians’

perception that they can easily be sued either by patients or their relatives seeking compensation for presumed medical errors, or is there more to it? We argue that a “defensive” attitude is part of a huge change in the conception of medicine that has taken place in the last decades and needs to be acted upon if we wish young people to continue to have an interest in, and the society at large to have trust in, the profession.

Clinical medicine has always been based on patient–physician trust, and this has traditionally been by far the main source of professional satisfaction for physicians. Indeed, factors such as prestige of medicine, intellectual stimulation, interaction with colleagues, and financial rewards are much less important<sup>[17]</sup>.

Unfortunately, this fundamental trust has been progressively eroded by lack of patient face-time, increasing lack of clinical autonomy, and liability concerns. A national Survey of America’s Physicians (completed by 17236 physicians; 10170 of whom wrote additional comments) gave a dismaying picture of the medical profession: just 14% of physicians surveyed have the necessary time to provide the highest levels of care, 60% have been detracted from patient interaction by electronic health records, 54% have a negative morale, 49% suffer from feelings of burn-out, 49% would not recommend medicine as a profession to their children, 48% intend to reduce hours, retire, get a non-clinical job, or limit patient access to their practices, and only 37% have positive feelings about the future of the medical profession<sup>[17]</sup>. This is not a picture limited to one country. On the contrary, these feelings are increasingly shared by doctors in many other countries.

Physicians cannot increasingly spend more time at inserting data into a computer than at directly caring for their patients (in US ambulatory practice, for each hour doctors give direct clinical face time to patients, approximately two further hours are spent on electronic health records and desk work in the clinic day)<sup>[18]</sup>. Caring is not only about examining patients, ordering tests and prescribing drugs. It is about spending time with patients, being at their side, talking to them without hurrying, showing a sincere interest in their condition and in its social implications, answering their questions, and addressing their concerns. If this relationship is lost or diminished to unacceptable levels, then defensive medicine is the logical consequence.

Medicine has moved from a family or personal doctor to a hospitalist/hospital employee model. Even in the USA, family doctors largely do not take care of their patients in a hospital close to home anymore. Patients feel that the doctors who have not spent enough time to talk to them could have missed or overlooked important aspects of their illness. The surgeons who have not had time to listen to their patients’ fears and concerns will have acted superficially and may have made mistakes.

To fix these problems, doctors must be allowed to spend the necessary time with their patients, a privilege that even residents/registrars in the hospitals no longer have. In fact published studies have found that residents

spend more time using a computer than they do with patients<sup>[19-21]</sup>. Even though hiring more personnel and spending more funds will be necessary to allow doctors to spend more time with patients, this needs to be done. If defensive medicine is reduced, it may actually decrease health expenditures, not increase.

Another issue is the fact that patients, who are well informed and educate themselves *via* the internet, are ultimately in search of experienced physicians who they can trust and who will look after them and not only after an illness. Are patients looking for doctors who rigidly follow algorithms and guidelines? They aren't. Algorithms that transform patient care into a sequence of yes/no decisions do not consider the complexity of medicine and the reasoning inherent in clinical judgment. Young clinicians must abandon the idea that not adhering strictly to guidelines implies being sentenced in court, and should not think that guidelines are a magic bullet for all healthcare issues. The best evidence is helpful if used in the setting of a particular patient in a certain environment, interpreted and utilized on the basis of clinical experience. As much as a recipe book does not guarantee success in cooking, so clinical guidelines cannot guarantee success in diagnosis or treatment. In fact a standardized evidence-based practice, based on protocols and guidelines, is aimed at improving population rather than individual health.

Clinical reasoning is extremely important and dedicated time to learn this must be made in medical school curricula. Contrary to popular belief, mistakes are caused more often by errors in cognitive function (failure to elicit, synthesize, or act on available information) than lack of knowledge.

Medicine cannot be, and is not as black and white as protocols and checklists seem to imply. Physicians and surgeons must decide on the basis of imperfect data, and face unpredictable patient responses to treatment and outcomes that are not black and white<sup>[22]</sup>. It is time to stop disproportionate ordering of tests (carrying risks of false positive results or even iatrogenic harm)<sup>[23]</sup> in an attempt to achieve an unobtainable diagnostic certainty<sup>[24]</sup>.

Hence the public and the physicians need to be educated that medicine is not a perfect science but rather an imperfect art, as it always has been. It is a huge mistake to expect perfection and totally predictable results that no one can guarantee even in the most technologically advanced environment. Complications are difficult to avoid and play an important role in medical malpractice suing. In one highly cited study in New York, adverse events were reported in 3.7% of all hospitalizations, and negligence was present in less than 30% of these cases<sup>[25]</sup>. The culture of discredit and culpability, which encourages physicians to hide and deny mistakes, has made any mistake or adverse outcome an intolerable failure<sup>[9]</sup>. Coupled with the modern society's lack of tolerance for inevitable morbidity and mortality (whereby even death is no longer considered a possible consequence of a disease but rather a preventable complication), a poor outcome is then presumed to indicate

a wrong process<sup>[9]</sup>. A medical treatment that does not lead to the anticipated, positive outcome is regarded by the patient or relatives as a mistake, while it may just be unachievable even in the most advanced healthcare setting.

A defensive attitude is one of the contributing factors in the impressive reduction in the number of autopsies worldwide over the last few decades<sup>[26,27]</sup>. Some doctors fear that they could be sued should the findings prove a wrong diagnosis or a clinically missed pathology<sup>[28]</sup>.

A vicious cycle starts when doctors are involved in an unexpected adverse event, mistake, and/or patient related harm; then are sued by the patient or relatives; next the (sometimes huge) trauma related to the event leads to physical, cognitive, and behavioral symptoms, including the practice of defensive medicine<sup>[29,30]</sup>. Support obtained by these physicians in their institutions is poor and inefficient<sup>[31]</sup>. Adequate support is necessary to help interrupt this negative series of events.

In conclusion, defensive medicine is the consequence of a deep crisis in the relationship between doctors and society, which has led people to consider modern medicine as able to treat any disease, and doctors to behave opportunistically rather than doing what they think is really in the best interest of their patients. The increasing pressure to examine more and more patients in a short period of time, and to get patients out of the hospital faster and faster needs to be stopped. Doctors would then be able to consider their patients' clinical and psychosocial history and no longer instantly order tests and prescribe drugs to diminish their legal responsibility should they be charged with imprudence, inexperience, or negligence. While decriminalizing medical mistakes and handling them in civil courts or by medical organizations in all countries can help, this must also be associated with changes in the health systems from a punitive attitude to one that favors identification and correction of structural errors. Physicians must of course know the best and most current evidence in their fields but always consider the evidence in the context of their experience and of the individual case they have in front of them. Finally, continuing efforts must be made to educate the public that information acquired from online sources outside of an appropriate clinical context is generally inappropriate. Also, the media should realize the extremely damaging nature of reporting presumed medical errors and subjecting physicians to public trials through newspapers, radios, television or websites before they are eventually judged in court<sup>[32]</sup>. We exhort colleagues not to succumb to pressure deriving from the system, the patients, and their peers<sup>[33]</sup>, and we urge healthcare administrators, policymakers, patients' organizations and journalists to cooperate and make healthcare systems better and safer.

---

## REFERENCES

- 1 **Bell RS**, Loop JW. The utility and futility of radiographic skull examination for trauma. *N Engl J Med* 1971; **284**: 236-239 [PMID:

- 5539346 DOI: 10.1056/NEJM197102042840504]
- 2 **Katellaris AG.** Reasonable practice is not defensive practice. *Med J Aust* 2011; **194**: 219 [PMID: 21381988]
  - 3 **Ortashi O,** Virdee J, Hassan R, Mutrynowski T, Abu-Zidan F. The practice of defensive medicine among hospital doctors in the United Kingdom. *BMC Med Ethics* 2013; **14**: 42 [PMID: 24168064 DOI: 10.1186/1472-6939-14-42]
  - 4 **Panella M,** Rinaldi C, Leigh F, Knesse S, Donnarumma C, Kul S, Vanhaecht K, Di Stanislao F. Prevalence and costs of defensive medicine: a national survey of Italian physicians. *J Health Serv Res Policy* 2017; **22**: 211-217 [PMID: 28534429 DOI: 10.1177/1355819617707224]
  - 5 **Zhu L,** Li L, Lang J. The attitudes towards defensive medicine among physicians of obstetrics and gynaecology in China: a questionnaire survey in a national congress. *BMJ Open* 2018; **8**: e019752 [PMID: 29431139 DOI: 10.1136/bmjopen-2017-019752]
  - 6 **Broom A,** Kirby E, Gibson AF, Post JJ, Broom J. Myth, Manners, and Medical Ritual: Defensive Medicine and the Fetish of Antibiotics. *Qual Health Res* 2017; **27**: 1994-2005 [PMID: 28737082 DOI: 10.1177/1049732317721478]
  - 7 **Tebano G,** Dyar OJ, Beovic B, Béraud G, Thilly N, Pulcini C; ESCMID Study Group for Antimicrobial stewardship (ESGAP). Defensive medicine among antibiotic stewards: the international ESCMID AntibioLegalMap survey. *J Antimicrob Chemother* 2018; **73**: 1989-1996 [PMID: 29635515 DOI: 10.1093/jac/dky098]
  - 8 **O'Leary KJ,** Choi J, Watson K, Williams MV. Medical students' and residents' clinical and educational experiences with defensive medicine. *Acad Med* 2012; **87**: 142-148 [PMID: 22189882 DOI: 10.1097/ACM.0b013e31823f2c86]
  - 9 **Kachalia A,** Gandhi TK, Puopolo AL, Yoon C, Thomas EJ, Griffey R, Brennan TA, Studdert DM. Missed and delayed diagnoses in the emergency department: a study of closed malpractice claims from 4 liability insurers. *Ann Emerg Med* 2007; **49**: 196-205 [PMID: 16997424 DOI: 10.1016/j.annemergmed.2006.06.035]
  - 10 **Hoffman JR,** Kanzaria HK. Intolerance of error and culture of blame drive medical excess. *BMJ* 2014; **349**: g5702 [PMID: 25315302 DOI: 10.1136/bmj.g5702]
  - 11 **Emanuel EJ,** Fuchs VR. The perfect storm of overutilization. *JAMA* 2008; **299**: 2789-2791 [PMID: 18560006 DOI: 10.1001/jama.299.23.2789]
  - 12 **Thomas KB.** The consultation and the therapeutic illusion. *Br Med J* 1978; **1**: 1327-1328 [PMID: 647263 DOI: 10.1136/bmj.1.6123.1327]
  - 13 **Hoffmann TC,** Del Mar C. Clinicians' Expectations of the Benefits and Harms of Treatments, Screening, and Tests: A Systematic Review. *JAMA Intern Med* 2017; **177**: 407-419 [PMID: 28097303 DOI: 10.1001/jamainternmed.2016.8254]
  - 14 **Mello MM,** Chandra A, Gawande AA, Studdert DM. National costs of the medical liability system. *Health Aff (Millwood)* 2010; **29**: 1569-1577 [PMID: 20820010 DOI: 10.1377/hlthaff.2009.0807]
  - 15 **Gelmetti C.** Cruising between Scylla and Charybdis ... Just a hope? *Eur J Intern Med* 2016; **27**: e10 [PMID: 26597342 DOI: 10.1016/j.ejim.2015.09.002]
  - 16 **Jena AB,** Schoemaker L, Bhattacharya J, Seabury SA. Physician spending and subsequent risk of malpractice claims: observational study. *BMJ* 2015; **351**: h5516 [PMID: 26538498 DOI: 10.1136/bmj.h5516]
  - 17 **The Physicians Foundation.** 2016 Survey of America's Physicians Practice Patterns Perspectives. September 2016. Available from: URL: [https://physiciansfoundation.org/wp-content/uploads/2018/01/Biennial\\_Physician\\_Survey\\_2016.pdf](https://physiciansfoundation.org/wp-content/uploads/2018/01/Biennial_Physician_Survey_2016.pdf)
  - 18 **Sinsky C,** Colligan L, Li L, Prgomet M, Reynolds S, Goeders L, Westbrook J, Tutty M, Blike G. Allocation of Physician Time in Ambulatory Practice: A Time and Motion Study in 4 Specialties. *Ann Intern Med* 2016; **165**: 753-760 [PMID: 27595430 DOI: 10.7326/M16-0961]
  - 19 **Block L,** Habicht R, Wu AW, Desai SV, Wang K, Silva KN, Niessen T, Oliver N, Feldman L. In the wake of the 2003 and 2011 duty hours regulations, how do internal medicine interns spend their time? *J Gen Intern Med* 2013; **28**: 1042-1047 [PMID: 23595927 DOI: 10.1007/s11606-013-2376-6]
  - 20 **Manykina L,** Vawdrey DK, Hripscak G. How Do Residents Spend Their Shift Time? A Time and Motion Study With a Particular Focus on the Use of Computers. *Acad Med* 2016; **91**: 827-832 [PMID: 27028026 DOI: 10.1097/ACM.0000000000001148]
  - 21 **Wenger N,** Méan M, Castioni J, Marques-Vidal P, Waeber G, Garnier A. Allocation of Internal Medicine Resident Time in a Swiss Hospital: A Time and Motion Study of Day and Evening Shifts. *Ann Intern Med* 2017; **166**: 579-586 [PMID: 28135724 DOI: 10.7326/M16-2238]
  - 22 **Simpkin AL,** Schwartzstein RM. Tolerating Uncertainty - The Next Medical Revolution? *N Engl J Med* 2016; **375**: 1713-1715 [PMID: 27806221 DOI: 10.1056/NEJMp1606402]
  - 23 **Dhaliwal K,** Malkhasyan V, Elhassan M. In with acute bronchitis; out with duodenal perforation: the potentially harmful cascade of over-testing. A case report. *J Community Hosp Intern Med Perspect* 2018; **8**: 26-28 [PMID: 29441163 DOI: 10.1080/20009666.2018.1424486]
  - 24 **Kassirer JP.** Our stubborn quest for diagnostic certainty. A cause of excessive testing. *N Engl J Med* 1989; **320**: 1489-1491 [PMID: 2497349 DOI: 10.1056/NEJM198906013202211]
  - 25 **Brennan TA,** Leape LL, Laird NM, Hebert L, Localio AR, Lawthers AG, Newhouse JP, Weiler PC, Hiatt HH. Incidence of adverse events and negligence in hospitalized patients. Results of the Harvard Medical Practice Study I. *N Engl J Med* 1991; **324**: 370-376 [PMID: 1987460 DOI: 10.1056/NEJM199102073240604]
  - 26 **Nemetz PN,** Tanglos E, Sands LP, Fisher WP Jr, Newman WP 3rd, Burton EC. Attitudes toward the autopsy--an 8-state survey. *MedGenMed* 2006; **8**: 80 [PMID: 17406199]
  - 27 **Blokker BM,** Weustink AC, Hunink MGM, Oosterhuis JW. Autopsy rates in the Netherlands: 35 years of decline. *PLoS One* 2017; **12**: e0178200 [PMID: 28617835 DOI: 10.1371/journal.pone.0178200]
  - 28 **Bove KE,** Iery C; Autopsy Committee, College of American Pathologists. The role of the autopsy in medical malpractice cases, II : controversy related to autopsy performance and reporting. *Arch Pathol Lab Med* 2002; **126**: 1032-1035 [PMID: 12204051 DOI: 10.1043/0003-9985(2002)126<1032:TROTAL>2.0.CO;2]
  - 29 **Panella M,** Rinaldi C, Vanhaecht K, Donnarumma C, Tozzi Q, Di Stanislao F. [Second victims of medical errors: a systematic review of the literature]. *Ig Sanita Pubbl* 2014; **70**: 9-28 [PMID: 24770362]
  - 30 **Laurent A,** Aubert L, Chahraoui K, Bioy A, Mariage A, Quenot JP, Capellier G. Error in intensive care: psychological repercussions and defense mechanisms among health professionals. *Crit Care Med* 2014; **42**: 2370-2378 [PMID: 25054673 DOI: 10.1097/CCM.0000000000000508]
  - 31 **Rinaldi C,** Leigh F, Di Dio A, Vanhaecht K, Donnarumma C, Panella M. [Second victims in healthcare: the stages of recovery following an adverse event]. *Ig Sanita Pubbl* 2016; **72**: 357-370 [PMID: 27783608]
  - 32 **Toraldo DM,** Vergari U, Toraldo M. Medical malpractice, defensive medicine and role of the "media" in Italy. *Multidiscip Respir Med* 2015; **10**: 12 [PMID: 26052439 DOI: 10.1186/s40248-015-0006-3]
  - 33 **Assing Hvidt E,** Lykkegaard J, Pedersen LB, Pedersen KM, Munck A, Andersen MK. How is defensive medicine understood and experienced in a primary care setting? A qualitative focus group study among Danish general practitioners. *BMJ Open* 2017; **7**: e019851 [PMID: 29273671 DOI: 10.1136/bmjopen-2017-019851]

**P- Reviewer:** Cho SY, Sergi CM **S- Editor:** Ma YJ  
**L- Editor:** Filipodia **E- Editor:** Song H