

# Physician Orders for Life-Sustaining Treatment and Emergency Medicine: Ethical Considerations, Legal Issues, and Emerging Trends

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Since its original development in Oregon in 1993, Physician Orders for Life-Sustaining Treatment (POLST) is quickly growing in popularity and prevalence as a method of communicating the end-of-life care preferences for the seriously ill and frail nationwide. Early evidence has suggested significant advantages over advance directives and do-not-resuscitate/do-not-intubate documents both in accuracy and penetration within relevant populations. POLST also may contribute to the quality of end-of-life care administered. Although it was designed to be as clear as possible, unexpected challenges in the interpretation and use of POLST in the emergency department do exist. In this article, we will discuss the history, ethical considerations, legal issues, and emerging trends in the use of POLST documents as they apply to emergency medicine. [Ann Emerg Med. 2014;64:140-144.]

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## INTRODUCTION

Emergency physicians frequently care for dying patients and often make time-sensitive decisions without adequate medical history and knowledge of the patient's end-of-life care preferences. The patient may not be able to communicate with the physician, and accompanying documents, such as an advance directive or do-not-resuscitate (DNR)/do-not-intubate (DNI) document, commonly do not adequately guide the physician in making decisions about critical interventions.<sup>1,2</sup> The complex medical conditions of an aging population and technologic advances that provide an increasing number of options for intervention compound the problems related to end-of-life care in the emergency department (ED). The Physician Orders for Life-Sustaining Treatment (POLST) was developed to provide a means for patients to inform caregivers about specific treatment preferences, with clarity and sufficient nuance, before death is imminent. Although POLST documents may also be referred to as physician orders for scope of treatment, medical orders for scope of treatment, and medical orders for life-sustaining treatment, they all share the same core elements with similar form design.<sup>3</sup> This article will review the evolution of the POLST form, address relevant ethical issue considerations, and discuss implementation of POLST and future developments as they apply to emergency medicine.

## BACKGROUND, HISTORY AND EVOLUTION OF THE POLST PARADIGM

POLST emerged as a response to a number of trends in emergency medicine. Cardiopulmonary resuscitation (CPR),

originally developed for patients with potentially reversible cardiac arrest, began to be used in almost all cardiopulmonary arrests, in part because it was presumed that reasonable individuals in a similar situation would choose to receive lifesaving interventions.<sup>4</sup> Because of this widespread practice, DNR orders were developed for people with advanced chronic medical illnesses for whom the use of resuscitation was unlikely to substantially alter life expectancy or would not be appropriate because of the patient's or surrogate's wish to forgo life-sustaining treatment.<sup>5</sup> Typically, DNR orders applied during the hospital stay but did not follow the patient on discharge.<sup>6</sup>

As emergency medical services developed protocols for treating patients in the out-of-hospital setting, it was recognized that DNR orders could identify patients for whom resuscitation should be withheld during out-of-hospital treatment and transport. Out-of-hospital or "community" DNR orders (also referred to as "standing" DNR orders) were developed and enacted legislatively in many states and had authority as valid expressions of patient end-of-life treatment preferences in the out-of-hospital, ED, and inpatient settings.<sup>7</sup>

The Center for Ethics in Health Care at Oregon Health Sciences University in 1991 convened a task force to address standardized portable medical orders for patients with progressive, chronic illnesses in regard to life-sustaining medical treatment, including resuscitation, intubation, antibiotics, and artificial nutrition and hydration. In 1993, the university adopted the name Physician Orders for Life-Sustaining Treatment and acronym POLST, and early studies showed their effectiveness in increasing care delivered in accordance with patient wishes.<sup>8,9</sup>

In 2009, the statewide Oregon POLST registry was devised to allow electronic access to a central registry rather than relying on a paper form or health care institution medical record.<sup>10</sup> The POLST program has continued to help clinicians honor patient wishes, becoming a valuable adjunct to advance directives.<sup>11,12</sup> In addition to the 16 states that have fully endorsed POLST programs by the end of 2013, another 27 have programs in development, leaving just 7 without a POLST program in some stage of development.<sup>13</sup> For a list of states and respective POLST forms and other related resources, visit: <http://www.polst.org/educational-resources/resource-library/>.

## END-OF-LIFE DECISIONMAKING IN THE ED: CURRENT STATUS, CHALLENGES, AND ETHICAL CONSIDERATIONS

Commonly encountered models for advanced care planning in the ED are advance directives, standing DNR (sometimes called do not attempt resuscitation rather than DNR), and DNI orders. Although each was developed to communicate patient preferences for end-of-life care, over time advance directives and DNR/DNI orders have been criticized for falling short of that purpose.<sup>1,2,14,15</sup> POLST forms, on the other hand, purport to make up for the shortcomings of DNR/DNI and advance directive documents.

Although the original aim of advance directives was to improve clarity, allowing room for detail and flexibility as necessary to give patients control of end-of-life treatment, 30 years of efforts to promote their use have failed, achieving only an estimated prevalence of 18% of the adult population in the United States.<sup>15</sup> In a single-center survey study of Canadian ED patients, only 5.6% of the 19.3% of patients who reported having an advance directive brought it with them to the hospital; as a result, emergency physicians do not often have access to this information when it is most needed.<sup>16,17</sup> Advance directives also mistakenly assume that patient preferences are stable over time and across all clinical scenarios.<sup>1,18</sup> In reality, however, the reversibility of a patient's illness and the probability of his or her survival heavily influence end-of-life treatment preferences.<sup>19</sup> In addition, patients infrequently expend the emotional energy required for advance directive planning; do not understand the unpredictable, uncertain, and complex nature of critical illness; and do not acknowledge or anticipate that advanced directives and proxies can and sometimes do complicate critical care.<sup>1</sup> Finally, despite the fact that more than a quarter of elderly US residents require surrogate decisionmaking, their surrogates frequently make inaccurate substituted judgments.<sup>14,20</sup>

The prevalence of standing DNR/DNI orders for ED patients is less clear. Most frequently used for patients with a clear terminal condition, these standing orders require a physician's signature on a state-approved form.<sup>21</sup> Given the role self-determination plays in our basic understanding of ethically appropriate medical care, it is crucial that any document used to convey patient preference for life-sustaining measures be as accurate as possible. DNR/DNI orders do not include

considerations of preferences based on context, survivability, or other considerations not included in the document. Despite the specificity implied by the title of the orders themselves, clinicians frequently more broadly interpret DNR/DNI orders beyond precluding CPR and intubation. Previous studies have demonstrated that if they have a DNR order, patients in acute heart failure are less likely to be treated according to quality assurance measures, nursing home patients are less likely to be hospitalized when receiving a diagnosis of pneumonia, and patients with cardiac disease admitted for acute coronary syndrome are less aggressively treated and more likely to die.<sup>22-24</sup> Even decisions concerning patient disposition are influenced by a patient's DNR status, with lower rates of admission to an ICU regardless of a patient's age, Acute Physiology and Chronic Health Evaluation II score, or functional status.<sup>25</sup> Given that patients with DNR/DNI orders frequently desire aggressive treatment for acute conditions short of CPR, advance directives with greater delineation of patient end-of-life preferences were proposed to enhance communication of those wishes.<sup>2,26</sup>

## EVIDENCE SUPPORTING POLST DOCUMENTS IN ADVANCE CARE PLANNING

POLST documents address many of the previously discussed criticisms of DNR/DNI and advance directives (see an example form in Appendix E1, available online at <http://www.annemergmed.com>). Their use is intended for seriously ill or frail patients with life-limiting advanced illness, patients who have the threat of losing their decisionmaking capacity, and anyone with strong treatment preferences.<sup>27</sup> POLST forms break end-of-life care interventions into categories of care (CPR, medical interventions including intubation, antibiotics, and artificial hydration and nutrition) and present patients with 2 or 3 corresponding clear choices, ranging from comfort measures only, to supportive noninvasive treatments, to full treatment. The form also requires a description of patient goals. Whereas DNR/DNI documents are too specific to guide clinicians outside the avoidance of CPR and intubation and advance directives are often too general to apply to specific medical encounters, POLST documents serve as a middle ground, translating patient goals and values into medical orders that are easily understood and specific enough to apply to most medical encounters.

Early evidence of POLST usage suggests important improvements over traditional DNR orders in the communication and implementation of patient end-of-life care preferences. Hickman et al<sup>28,29</sup> studied 146 nursing facilities in Oregon with 356 residents aged 65 years and older and found that most facilities use POLST to convert patient preference to medical order. They also found that a majority of residents with DNR orders as part of their POLST forms had a preference for treatment in at least 1 other category, whereas nearly half of patients with orders to resuscitate had orders to limit treatment in at least 1 other category. These findings strongly suggest that DNR status alone does not predict patient preferences for the level of aggressiveness and that POLST forms are useful in

capturing those preferences.<sup>30</sup> These early studies suggest that the use of POLST carries significant advantages in accurately communicating preferences for life-sustaining therapies, beyond CPR and intubation, where DNR orders and advance directive have fallen short.

In addition to the focus on self-determination, the use of POLST may help clinicians improve the quality of care administered. In its 2006 consensus report, the National Quality Forum listed the use of POLST as a “preferred practice,” recognizing the community collaboration and cooperation involved in a state’s adoption of the POLST paradigm as an effective method of promoting advance care planning.<sup>31</sup> Advanced care planning, in turn, can help patients and their families prepare for death, achieve peace of mind, and create higher levels of overall patient satisfaction.<sup>32</sup> Furthermore, a multicenter study examining the consistency between treatments provided to nursing home residents and their POLST documents reported that 94% of the interventions provided were consistent with their POLST orders.<sup>29</sup> Personnel in hospice care settings have also noted POLST to be useful, helpful, and reliable.<sup>29</sup> Given the benefits of advance care planning, the favorable opinions of health care personnel, and the consistency of the care administered to patients with POLST orders, a cogent argument can be made that the POLST paradigm has the potential to improve the quality of end-of-life care, in addition to more accurately describing patient preferences.

## INITIAL APPROACH TO THE PATIENT WITH A POLST FORM

There are several ethical considerations in regard to the use of documents addressing end-of-life care preferences, including those expressed in the POLST form. Although documents such as DNR/DNI and POLST are valuable in communicating patient preferences, clinicians should confirm with patients who have decisionmaking capacity that such documents continue to express the patients’ wishes, giving patients the opportunity to voice any changes in treatment preferences. If a patient with intact decisionmaking capacity elects a course of treatment that seems to change his or her documented preferences, it is incumbent on the emergency physician to discuss such changes with the patient to ensure clarity in goals of acute therapy, including relevant family members and other appropriate providers whenever possible. A patient with intact decisionmaking capacity has the authority to override previous advanced planning documents. In the absence of patient decisionmaking capacity, however, the emergency physician should rely on a valid POLST document as the best proxy for patients’ goals of care and treatment preferences available.

## APPLICATION OF POLST IN THE ED

There are a number of potential legal barriers to the development of a state POLST program, including already existing laws governing living wills, durable powers of attorney

- Insufficient completion of the form or lack of authorizing provider signature
- Failure to transport POLST form with a patient across treatment settings, including the emergency department.
- Inadequate education regarding authorizing statute and legal protections for following POLST within the patient’s respective state.
- Failure to read the contents of the POLST form, and assuming to know its contents and how they apply to a patient’s end-of-life care.
- Following a POLST to the letter without confirming its contents with a patient with preserved decision-making capacity or their surrogate decisionmakers when available.

**Figure.** Common challenges in the use of POLST forms.

for health care, default surrogate provisions, guardianship law, and out-of-hospital DNR protocols.<sup>3</sup> In addition, the appropriate state authority must recognize the orders as valid for use by emergency medical services. Nursing homes, hospices, emergency facilities, and hospitals must also recognize its validity, which may require modifying bylaws about clinician credentialing. Implementing POLST in EDs is just one step within a community or statewide initiative to develop and adopt the physician order form for local use.<sup>12</sup> Education of health care professionals to use the forms with patients when discussing end-of-life care will also represent a challenge.<sup>33,34</sup> There is, however, a library of resources to assist states wishing to develop a POLST program, offered on the <http://www.polst.org> Web site, that includes training videos, brochures, providers and consumer guides, implementation checklists, and sample forms.

In the ideal application of the POLST paradigm, the form is appropriately filled out and signed after an informed discussion with a patient’s physician, always accompanies the patient, and has the authority to represent the patient’s end-of-life care preferences in all clinical settings. This may avoid unnecessary or unwanted transfers to the ED. Despite what might happen under ideal circumstances, however, there are many challenges that may occur while trying to manage a patient with a POLST form. These include caring for a patient whose POLST form is not available or was not transported with the patient, insufficient completion of the form or lack of authorizing provider signature, surrogate decisionmakers who report changes to a patient’s end-of-life care preferences that contradict the POLST form, and others situations (Figure). Solid understanding about the use of the form, along with urgent administrative, legal, or ethical consultation, may be needed.

Although most states have either an established or developing POLST program, many have not yet provided explicit statutory

protection of physicians seeking to honor patient wishes through a POLST form (as is frequently provided in the setting of DNR orders and advance directives). As a result, many physicians are concerned about the legal liability involved in using the forms. Even in those states without explicit statutory protection, however, physicians are protected by common law by compliance with generally accepted standards of practice in their area.<sup>35</sup> Furthermore, the federal government takes a strong position on the hospital's obligation to honor patient decisions concerning their care.<sup>36</sup> Finally, we are not aware of a single suit brought against a physician who followed the wishes of a patient as documented by a POLST form in the more than 10 years of its use.

## POLST: FUTURE CONSIDERATIONS

Even given its success in capturing patient preferences where DNR/DNI and advance directives have fallen short, however, recently published literature points to a need for further study and refinement. In a study of 31,294 POLST forms examining the various combinations of orders that may be chosen, Schmidt et al<sup>37</sup> revealed small populations of patients who choose order sets that are not medically feasible or logically consistent (eg, attempt resuscitation and comfort measures only) or that might require more interpretation than time might allow during an emergency (eg, attempt resuscitation and limited interventions). More broadly interpreted, POLST is a relatively new method of communicating patient preferences for end-of-life care, and there is still much to investigate in regard to the outcomes on capturing patient preferences and on the quality of end-of-life care delivered.

The penetration and adoption of POLST is increasing rapidly.<sup>38-40</sup> In a time in which technology and consumerism drive change, POLST is likely to gain considerable traction as cloud-based data storage and transfer become increasingly secure and accessible. Cloud-based POLST registries are the natural progression of mature programs in states such as Oregon and are already proving to be effective tools for making legally executed POLST documents available to emergency personnel and other health professionals.<sup>41,42</sup> A more centralized, federal system allowing access to information such as that offered by the Department of Veterans Affairs' Veterans Health Administration may allow the management of large POLST registries.<sup>43</sup> There are still legitimate challenges with cloud-based POLST registries, including portability, legality, compliance, access management, data loss prevention, infrastructure expansion, and data lifecycle management.<sup>44</sup> Although privacy concerns and the legal standing of such digitized POLST documents may be challenged, there is good reason to expect POLST documents to be found anywhere digitized information may be stored.

## CONCLUSION

As we seek to preserve the dignity of patients in the final moments of their lives, the need for an ability to communicate patient end-of-life treatment preferences grows more desirable and compelling. The POLST paradigm has potential advantages in accuracy and penetration over advance directive and DNR/DNI

documents and may positively contribute to the quality of end-of-life care administered. Although the development of POLST programs can be arduous and the use of the document challenging, evidence of its effectiveness, an aging population, and technological advances promise to push the paradigm forward. Working at the front lines of medicine, emergency physicians are likely to see POLST documents more frequently and should learn to recognize, interpret, and implement them appropriately.

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## REFERENCES

- Perkins HS. Controlling death: the false promise of advance directives. *Ann Intern Med.* 2007;147:51-57.
- Jesus JE, Allen MB, Michael GE, et al. Preferences for resuscitation and intubation among patients with do-not-resuscitate/do-not-intubate orders. *Mayo Clin Proc Mayo Clin.* 2013;88:658-665.
- Hickman SE, Sabatino CP, Moss AH, et al. The POLST (Physician Orders for Life-Sustaining Treatment) paradigm to improve end-of-life care: potential state legal barriers to implementation. *J Law Med Ethics J Am Soc Law Med Ethics.* 2008;36:4, 119-140.
- Rabkin MT, Gillerman G, Rice NR. Orders not to resuscitate. *N Engl J Med.* 1976;295:364-366.
- Blackhall LJ. Must we always use CPR? *N Engl J Med.* 1987;317:1281-1285.
- Jonsen AR, Siegler M, Winslade WJ. *Clinical Ethics: A Practical Approach to Ethical Decisions in Clinical Medicine.* New York, NY: McGraw-Hill Medical; 2010.
- Iserson KV, Rouse F. Prehospital DNR orders. *Hastings Cent Rep.* 1989;19:17; discussion 17-19.
- Dunn PM, Schmidt TA, Carley MM, et al. A method to communicate patient preferences about medically indicated life-sustaining treatment in the out-of-hospital setting. *J Am Geriatr Soc.* 1996;44:785-791.
- Schmidt TA, Hickman SE, Tolle SW, et al. The Physician Orders for Life-Sustaining Treatment program: Oregon emergency medical technicians' practical experiences and attitudes. *J Am Geriatr Soc.* 2004;52:1430-1434.
- Oregon Health & Science University. POLST registry launched [Internet]. [Cited November 9, 2013.] Available at: <http://www.ohsu>.

- edu/xd/about/news\_events/news/2009/polstregistrylaunchestoday.cfm?WT\_rank=2. Accessed November 9, 2013.
11. Fromme EK, Zive D, Schmidt TA, et al. POLST registry do-not-resuscitate orders and other patient treatment preferences. *JAMA*. 2012;307:34-35.
  12. Sabatino CP, Karp N. Improving advanced illness care: the evolution of state POLST programs [Internet]. AARP Public Policy Institute; 2011 [cited November 9, 2013]. Available at: <http://assets.aarp.org/rgcenter/ppi/cons-prot/POLST-Report-04-11.pdf>. Accessed April 8, 2014.
  13. POLST programs by state [Internet]. POLST programs by state. 2013. Available at: <http://www.polst.org/programs-in-your-state/>. Accessed April 8, 2014.
  14. Silveira MJ, DiPiero A, Gerrity MS, et al. Patients' knowledge of options at the end of life: ignorance in the face of death. *JAMA*. 2000;284:2483-2488.
  15. Fagerlin A, Schneider CE. Enough. The failure of the living will. *Hastings Cent Rep*. 2004;34:30-42.
  16. Gina K, Gill G, Fukushima E, et al. Prevalence of advance directives among elderly patients attending an urban Canadian emergency department. *CJEM*. 2012;14:90-96.
  17. Taylor DM, Ugoni AM, Cameron PA, et al. Advance directives and emergency department patients: ownership rates and perceptions of use. *Intern Med J*. 2003;33:586-592.
  18. Sehgal A, Galbraith A, Chesney M, et al. How strictly do dialysis patients want their advance directives followed? *JAMA*. 1992;267:59-63.
  19. Fried TR, Bradley EH, Towle VR, et al. Understanding the treatment preferences of seriously ill patients. *N Engl J Med*. 2002;346:1061-1066.
  20. Sulmasy DP, Terry PB, Weisman CS, et al. The accuracy of substituted judgments in patients with terminal diagnoses. *Ann Intern Med*. 1998;128:621-629.
  21. Sabatino CP. Survey of state EMS-DNR laws and protocols. *J Law Med Ethics J Am Soc Law Med Ethics*. 1999;27; 294, 297-315.
  22. Chen JLT, Sosnov J, Lessard D, et al. Impact of do-not-resuscitation orders on quality of care performance measures in patients hospitalized with acute heart failure. *Am Heart J*. 2008;156:78-84.
  23. Zweig SC, Kruse RL, Binder EF, et al. Effect of do-not-resuscitate orders on hospitalization of nursing home residents evaluated for lower respiratory infections. *J Am Geriatr Soc*. 2004;52:51-58.
  24. Jackson EA, Yarzebski JL, Goldberg RJ, et al. Do-not-resuscitate orders in patients hospitalized with acute myocardial infarction: the Worcester Heart Attack Study. *Arch Intern Med*. 2004;164:776-783.
  25. Cohen RI, Lisker GN, Eichorn A, et al. The impact of do-not-resuscitate order on triage decisions to a medical intensive care unit. *J Crit Care*. 2009;24:311-315.
  26. Hamel MB, Lynn J, Teno JM, et al. Age-related differences in care preferences, treatment decisions, and clinical outcomes of seriously ill hospitalized adults: lessons from SUPPORT. *J Am Geriatr Soc*. 2000;48(5 suppl):S176-S182.
  27. POLST: Guidance for Oregon's Health Care Professionals [Internet]. 2012 [cited January 10, 2014]. Available at: <http://www.oregonpolst.org/wp-content/uploads/2012/11/GuidebookMay2012final.pdf>. Accessed April 8, 2014.
  28. Hickman SE, Nelson CA, Perrin NA, et al. A comparison of methods to communicate treatment preferences in nursing facilities: traditional practices versus the Physician Orders for Life-Sustaining Treatment program. *J Am Geriatr Soc*. 2010;58:1241-1248.
  29. Hickman SE, Nelson CA, Moss AH, et al. Use of the Physician Orders for Life-Sustaining Treatment (POLST) paradigm program in the hospice setting. *J Palliat Med*. 2009;12:133-141.
  30. Hickman SE, Tolle SW, Brummel-Smith K, et al. Use of the Physician Orders for Life-Sustaining Treatment program in Oregon nursing facilities: beyond resuscitation status. *J Am Geriatr Soc*. 2004;52:1424-1429.
  31. National Quality Forum. *A National Framework and Preferred Practices for Palliative and Hospice Care Quality: A Consensus Report*. Washington, DC: National Quality Forum; 2006.
  32. Bomba PA, Vermilyea D. Integrating POLST into palliative care guidelines: a paradigm shift in advance care planning in oncology. *J Natl Compr Cancer Netw JNCCN*. 2006;4:819-829.
  33. Gundersen Health System. Respecting choices: advance care planning [Internet]. Available at: <http://www.gundersenhealth.org/respecting-choices>. Accessed April 9, 2014.
  34. Sugiyama T, Zingmond D, Lorenz KA, et al. Implementing Physician Orders for Life-Sustaining Treatment in California hospitals: factors associated with adoption. *J Am Geriatr Soc* [Internet]. August 2013. 2013;61:1337-1344. Available at: <http://doi.wiley.com/10.1111/jgs.12367>. Accessed January 14, 2014.
  35. National POLST Paradigm Task Force. POLST legislative guide [Internet]. Physician Orders for Life-Sustaining Treatment; 2014 [cited March 10, 2014]. Available at: <http://www.polst.org/wp-content/uploads/2014/02/2014-02-20-POLST-Legislative-Guide-FINAL.pdf>. Accessed March 10, 2014.
  36. Condition of participation: Patient's rights. 42 C.F.R. § 482.13(b).
  37. Schmidt TA, Zive D, Fromme EK, et al. Physician Orders for Life-Sustaining Treatment (POLST): lessons learned from analysis of the Oregon POLST Registry. *Resuscitation*. 2014;85:480-485.
  38. American Recovery and Reinvestment Act. Sect. 13001, 111-5 Feb 11, 2009.
  39. Centers for Medicare and Medicaid Services. Medicare C for, Baltimore MS 7500 SB, Usa M. Meaningful use [Internet]. 2013 [cited November 9, 2013]. Available at: [http://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/Meaningful\\_Use.html](http://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/Meaningful_Use.html). Accessed April 9, 2014.
  40. Meaningful use stage 2 [Internet]. [Cited January 17, 2014.] Available at: [http://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/Stage\\_2.html](http://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/Stage_2.html). Accessed January 17, 2014.
  41. Richardson DK, Fromme E, Zive D, et al. Concordance of out-of-hospital and emergency department cardiac arrest resuscitation with documented end-of-life choices in Oregon. *Ann Emerg Med*. 2014;63:375-383.
  42. Schmidt TA, Olszewski EA, Zive D, et al. The Oregon Physician Orders for Life-Sustaining Treatment Registry: a preliminary study of emergency medical services utilization. *J Emerg Med*. 2013;44:796-805.
  43. Topol EJ. *The Creative Destruction of Medicine: How the Digital Revolution Will Create Better Health Care*. Basic Books; 2012.
  44. CSO. 5 (More) key cloud security issues [Internet]. 2012 [cited November 9, 2013]. Available at: <http://www.csoonline.com/article/717307/5-more-key-cloud-security-issues>. Accessed April 9, 2014.

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