Use of the Computer To Uncover and Overcome Constraints on Knowledge and Action in Our Patient Care System

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To give patients better care, the treating doctor must possess complex knowledge (frequently inaccessible, obscured by nonessential data, or nonexistent) about the patient and disease. The short duration (often only 15 to 20 minutes) of the doctor-patient encounter effectively bars the doctor at the time and point of care from adequately, first, acquiring this requisite and actionable knowledge and, then, taking the definitive actions. Our aim has been to overcome this systemic bottleneck, i.e., the mismatch between the brief time assigned for the encounter and the much longer time ordinarily needed to achieve the requisite knowledge transfer and action taking. To do this, we have presented on our doctors’ PCs (via our Hospital’s intranet) clinical practice guidelines for chronic obstructive pulmonary disease (COPD) as algorithms on Web pages connected through hyperlinks to our VA Hospital’s clinical database (VISTA). These hyperlinks allow: 1) automatic and instantaneous extraction from VISTA and display on the algorithm via WebMan of the most recent preselected patient-specific information (spirometry results, drug doses, etc.) and 2) direct physician order entry (POE) of discrete action steps (referrals, drugs, etc.) through mouse-clicking. POE activation of guideline-recommended processes revealed a striking general inadequacy of knowledge-dependent patient care, which we were then able to correct through further computerization.

Early on, e.g., guideline implementation revealed that a majority of our COPD patients employ ineffective technique with the metered-dose inhalers (MDIs) they use to self-administer bronchodilators and steroids. We introduced, therefore, the use of an electronic spirometric aerosol inhalation monitor (AIM) to measure objectively and repeatedly our COPD patients’ MDI competence. We taught them with the AIM to correct their defects in performance and then entered their current proficiency status electronically into VISTA. Through WebMan this MDI proficiency rating and its date appear on the Web-based COPD algorithm; the physician can then act instantly by clicking on the order desired (e.g., continue current regimen, give further MDI instruction, add a spacer, or switch to specified noninhaled drugs). Of 25 consecutive COPD patients, 23 (92%) failed the AIM test. After the AIM was used for training, however, 13 (57%) of these 23 then passed fully and the remaining 10 (43%) improved their proficiency.

For the first time, therefore, the patient’s latest MDI skill (hitherto untested), or lack thereof, is immediately communicated to the doctor, who can now instantly exploit this actionable knowledge by orders that will improve care and cut waste and costs. The total time per patient encounter spent by the doctor to resolve this problem of optimizing MDI technique, important to the patient, is only several seconds.

References
