Outlook. Real-time medical and scientific communication and information is already at our fingertips, literally. A breakthrough will be “biocommunicators” incorporating a whole new dimension of information. Feasible potential applications include population-based cancer screening; prediction of drug response for biological or targeted therapies using genetic polymorphisms; environmental monitoring; on-site and bedside detection of critical laboratory and drug values on house calls by emergency responders; as well as clinical research with home-based collection of real-life biomedical data and FDA (Food and Drug Administration)-demanded patient-reported outcomes.

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Online-Only Material: eTables 1 and 2 and eFigures 1, 2, and 3 are available at http://www.archinternmed.com; they provide categorized exemplary software applications and other Internet-based resources for the various use scenarios in clinical practice, research, and biomedical education discussed. They include a brief marketing description (drawn from the app vendor’s site) and clickable hyperlinks for easy access. No endorsement is the property of the respective owners.


Patients With Infectious Diseases, Overcrowding, and Health in Hospital Staff

The evidence on whether treating patients with infectious diseases increases the risk of ill health among hospital staff is limited to specific infectious agents, such as methicillin-resistant Staphylococcus aureus (MRSA). However, any infectious agent that can be transmitted by airborne transmission or during treatment contact can be acquired at the workplace. We therefore examined whether the overall prevalence of infectious diseases among patients predicts ill health in hospital staff treating them, as indicated by increased absence from work because of sickness and antibiotic medication use. Furthermore, as patient overcrowding has been suggested to increase the transmission of infectious diseases within hospitals, we also studied whether there is an association between patient overcrowding and prevalence of infectious diseases and whether the association between the prevalence of patients with infectious diseases and ill health in hospital staff is dependent on ward overcrowding.

Methods. Study participants comprised 993 physicians and nurses (mean age, 42.4 years; 93.7% female; 84.7% registered nurses) in 54 acute care hospital wards in 5 acute care hospitals in Finland. The assessment methods used have been described previously. Briefly, ward-level prevalence of infectious diseases (hospital and community acquired) and other patient characteristics were assessed from case records of the 1102 patients in these wards. Ward overcrowding was determined using routinely collected monthly figures on bed occupancy for each ward. These ward-level data were linked to individual records on the employee sickness absence and antibiotic medication use (purchases of medicine with the World Health Organization Anatomical Therapeutic Chemical Classification code J01) during the subsequent 150 days. The records were obtained from employers and nationwide health registers.

Binary logistic regression analysis with the SAS multilevel GLIMMIX procedure was used to study the associations of ward-level exposure to infectious diseases with individual-level employee sickness absence (yes/no) and recorded antibiotic use (yes/no). The models were adjusted for employee characteristics (sex, age, occupation, type of employment, and chronic disease) and ward-level characteristics (ward specialty, mean age of patients, number of patients, mean number of invasive devices in patients, prevalence of operated patients, and patient overcrowding). To examine whether the associations were dependent on the level of patient overcrowding at the ward, the interaction term “overcrowding × exposure to infectious diseases” was entered into the model after entering the main effects of overcrowding and exposure to infectious diseases.
Results. Of the 54 wards, 12 (22%) were overcrowded, as indicated by bed occupancy of more than 85% during the study month. The mean overall patient infection prevalence was 25.1% vs 41.7% (P = .02) in nonovercrowded and overcrowded wards (hospital-acquired infection prevalence, 6.9% vs 14.0%; P = .03) (P < .05 for all, before and after adjustment for mean number of invasive devices in patients). A total of 468 employees (47.1%) had at least 1 sickness absence spell, and 118 (11.9%) made a purchase of antibiotics during the follow-up. After adjustment for participants' age, sex, and specialty, ward overcrowding was associated with a 1.77-fold (95% confidence interval [CI], 1.09-2.56) odds of sickness absence but was not associated with a 1.77-fold (95% CI, 0.53-1.73) odds of sickness absence by the level of patient overcrowding. Models are adjusted for employee age, sex, specialty, occupation, chronic disease, type of employment, and patient characteristics at the ward level (mean age, number of patients, mean number of invasive devices in patients, and prevalence of operated patients). CI indicates confidence interval; ID, infectious diseases; and Ref, reference. *Prevalence of sickness absence onset among employees.

Figure. Association (odds ratio [95% confidence interval]) between prevalence of patients with infectious diseases in the hospital ward and staff sickness absence by the level of patient overcrowding. Models are adjusted for employee age, sex, specialty, occupation, chronic disease, type of employment, and patient characteristics at the ward level (mean age, number of patients, mean number of invasive devices in patients, and prevalence of operated patients). CI indicates confidence interval; ID, infectious diseases; and Ref, reference. *Prevalence of sickness absence onset among employees.
In-Hospital Mobility and Length of Stay

The article by Fisher and colleagues provides an important contribution to the study of in-hospital ambulation of older adults and patient outcomes. Their report shows that patients who increased their walking by at least 600 steps from the first to second 24-hour day were discharged 1.7 days earlier than those who did not. Their study adds to the realization of the importance of in-hospital mobility. Though direct causation cannot be established, higher levels of mobility emerges as an important factor associated with shorter LOS.

Our results, together with the report of Fisher and colleagues, add to the realization of the importance of in-hospital mobility. Though direct causation cannot be established, higher levels of mobility emerges as an important factor associated with shorter LOS. Therapeutic guidelines regarding ambulation for older adults hospitalized for acute illness are warranted.

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In reply

We thank Shadmi and Zisberg for their interest in our article and were pleased to see similar findings on the association between higher levels of mobility and shorter lengths of stay reported in their study. We also agree that practical recommendations for ambulation during this critical period are needed. An important underlying assumption is that not all inactivity during hospitalization is necessary or in-


