were randomly assigned, and questionnaires distributed to caregivers prior to randomization, at 1 month, and at 3 months.

The General Health Questionnaire (scale of 1–30) score showed a decrease in caregiver psychological symptoms, with a nursing home pretest mean value of 17 reduced to 2.4 at 1 month (no P value provided). The control group’s mean value increased from 8.7 to 12. The Delusions-Symptoms States Inventory (scale of 1–7) score improved in the special nursing home group from 6.9 to 3.3, while the control group score worsened from 3.3 to 5.1 (no P values provided).

A sequential cohort recruited 349 patients with dementia at 35 Alzheimer special care units and 81 patients in 9 nursing homes, to determine if Alzheimer special care units are superior to traditional nursing homes in meeting the needs of patients with dementia.² Data were collected at baseline, 6, 12, and 18 months. Patients living in an Alzheimer special care unit were less likely to have been hospitalized at 6 months compared with patients living in a nursing home (9.5% vs 17%; P=.04) and were less likely to have been subjected to physical restraints at 6 months (49% vs 68%; P=.003). There was no significant difference in mortality rates and number of falls. In this trial, 117 residents died and 40 were discharged before completion.

A quasi-experimental design studied 67 residents in 19 gero-psychiatrically oriented group living homes and 97 residents in 7 traditional nursing homes with gero-psychiatric units to determine which facility better met the needs of patients with dementia.³ Questionnaires were filled out by caregivers at admission and by CNAs at 6 months. At 6 months, group home residents showed more activities of daily living compared with residents of traditional nursing homes on the QUALIDEM scale (scale of 1–6) (4.3 vs 1.9; P<.05). Fewer patients in group homes were subjected to physical restraints compared with traditional nursing home residents (10% vs 49%; P<.05). The study was conducted in the Netherlands, were all older adult facilities adhere to unique national quality standards.

Is a single dose of oral ondansetron effective in reducing rates of intravenous rehydration in children with gastroenteritis?

Evidence-Based Answer

One dose of oral ondansetron given in the emergency department significantly reduces the number of episodes of vomiting during oral rehydration therapy in children with acute gastroenteritis and reduces the number of children who require IV rehydration (SOR: A, meta-analysis).

A 2008 systematic review evaluated 11 RCTs of antiemetic agents compared with placebo for gastroenteritis in 1,123 pediatric patients (age range 1 month to 17 years).¹ In ondansetron trials, the medication was administered orally (2–8 mg and age-based dosing ranging from 1.6 to 4.0 mg) or intravenously (0.15–0.3 mg/kg). Compared with placebo, ondansetron reduced the need to administer IV fluids (4 trials, N=489; 14% vs 34%; RR 0.41; 95% CI, 0.28–0.62) and decreased the risk of persistent vomiting in the emergency department (5 trials, N=659; RR 0.45; 95% CI, 0.33–0.62). The authors also concluded that agents other than ondansetron—domperidone (2 trials), metoclopramide (2 trials), trimethobenzamide, and pyrilamine-pentobarbital (2 trials)—were not efficacious for reducing vomiting in small studies with inconsistent results.

A 2011 Cochrane review of 7 RCTs evaluated the efficacy of oral ondansetron for reducing vomiting and preventing the need for IV fluids in children with gastroenteritis.⁵ Patients treated with a dose of oral ondansetron (2–8 mg) in the emergency department required IV fluids less often than patients treated with placebo (3 trials, N=461; RR 0.57; 95% CI, 0.42–0.76; NNT=6). Use of oral ondansetron reduced immediate hospitalization rates for gastroenteritis during the emergency department stay compared with placebo (3 trials, N=465; RR 0.40; 95% CI, 0.19–0.83; NNT=17). However, the hospitalization rate 72 hours after discharge was not statistically significant between the ondansetron and placebo groups (3 trials, N=461; RR 0.75; 95% CI, 0.43–1.2).

The frequency of diarrhea was increased in children given ondansetron in 3 of the studies included in the Cochrane review (not amenable to statistical analysis). One of the largest of these RCTs, in which children

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were given weight-based ondansetron in doses from 2 to 8 mg orally, noted 1.4 episodes of diarrhea per child in the ondansetron group versus 0.5 per child in the placebo group (P<0.001).3

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Does long-term proton pump inhibitor therapy lead to adverse outcomes?

Evidence-Based Answer

There may be a modest increase in the risk of hip and spine fracture with proton pump inhibitor (PPI) use, but evidence is conflicting regarding whether this increased risk remains significant with long-term (>3 years) use (SOR: C, meta-analyses cohort and case control trials with heterogeneity). There may also be an increased risk of community-acquired pneumonia (CAP) associated with PPI use; however, the risk of CAP does not appear to be increased with long-term use (SOR: C, meta-analyses cohort and case control trials with heterogeneity).

A 2010 meta-analysis review of 12 observational trials (4 prospective and 8 retrospective) examined the risk of fractures in more than 1.5 million patients taking PPIs for 6 weeks to 7.8 years.1 Compared with nonusers, users had a significantly increased risk of spine fractures (4 trials, OR 1.5; 95% CI, 1.3–1.7) and hip fractures (10 trials, OR 1.2; 95% CI, 1.1–1.4). Further subgroup analysis of overall fracture risk with duration of exposure (<1 year and >3 years) revealed an increased risk of fracture with both long-term (6 trials, OR 1.4; 95% CI, 1.1–1.7) and short-term (5 trials, OR 1.2; 95% CI, 1.2–1.3) exposure when compared with nonusers (short- and long-term exposure were not compared with each other). In the analyses above, there was substantial heterogeneity in the hip fracture and long-term exposure groups, whereas there was no heterogeneity in the spine fracture and short-term exposure groups.

A subsequent 2011 meta-analysis of 10 observational trials (4 cohort, 6 case control) with more than 1 million patients, which overlapped with the meta-analysis above, arrived at similar conclusions regarding overall risk of hip fracture (9 trials, OR 1.3; 95% CI, 1.1–1.4) and spine fracture (4 trials, OR 1.5; 95% CI, 1.2–1.7) in PPI users compared with nonusers.2 This review also examined the risk of wrist/forearm fracture; when compared with nonusers no statistically significant increase was noted with PPI use (3 trials, OR 1.1; 95% CI, 0.95–1.2). With respect to duration of PPI exposure, only the risk of hip fracture was evaluated and showed a significantly increased risk in the short-term (<1 year) exposure group (6 trials, OR 1.2; 95% CI, 1.2–1.3) but not in the long-term (3–10 years) exposure group (7 trials, OR 1.3; 95% CI, 0.98–1.7). There was high heterogeneity in the long-term exposure group.

A 2010 meta-analysis examining the risk of CAP in PPI users analyzed 6 case control trials involving approximately 1 million patients (most aged >60 years).3 Pooled analysis revealed an increased risk of CAP associated with current PPI use compared with nonusers (OR 1.4; 95% CI, 1.1–1.7), but significant heterogeneity was noted. In subgroup analysis, new PPI use (not defined) was associated with an increased risk of CAP (5 trials, OR 1.9; CI, 1.4–2.6). There was no significant increase in risk of CAP for chronic (duration of use not defined) PPI users (5 trials, OR 1.1; 95% CI, 0.90–1.4).

A 2012 meta-analysis of 9 case control and cohort studies analyzing more than 120,000 patients with CAP also examined the risk of CAP in PPI users.4 Current use of PPIs (9 trials, OR 1.4; 95% CI, 1.1–1.8) and PPI use <30 days (6 trials, OR 1.7; 95% CI, 1.3–2.2) were both associated with increased risk of CAP compared with nonuse, but both groups had significant heterogeneity. There was no significant association between PPI use >180 days and CAP (3 trials, OR 1.1; 95% CI, 1.0–1.2).

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