The Geriatric Patient

33

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Contents

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33.1 Vignette

An 85-year-old woman, with a history of moderate dementia (with an MMSE of eighteen 6 months ago), hypertension, hyperlipidemia, coronary artery disease was admitted to the hospital because of altered mental status. History reveals worsening agitation after a fall about a week ago. Her current medications include oxybutynin for urinary incontinence, cimetidine for acid reflux, and citalopram 40 mg daily for depression, in addition to her antihypertensive and cardiovascular medications. Because she was agitated she had also been started on haloperidol (5 mg total daily) and 1 mg lorazepam every 6 h as needed a week ago with no improvement in behavior, but with further decrease in her eating and self-care. On physical exam she was noted to have cogwheeling, restlessness, and bruises on her arms and her left hip area. When palpating and performing range of motion of her left lower extremity, it was noted that she pulled back and got more agitated. Mini-Mental Status Exam was 12/30 with difficulties with orientation, spelling "WORLD" backwards, and recall. During the interview she stated that she wants to go home and dislikes medications. Staff reported

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that she has been refusing some of her medications. Labs were performed which indicated sodium 120, urinalysis positive for leukocyte esterase and nitrites, an EKG with QTc 490, and X-ray indicating ankle fracture. The patient was started on ciprofloxacin for urinary tract infection. A psychiatric consultation is requested for management of altered mental status and agitation, as well as for assessment of capacity to refuse treatment.

33.2 Introduction

The elderly or geriatric population—comprising people over the age of 65 years—is rapidly growing in the USA and throughout the world. According to the United Nations World Prospects (2012), the global population of people over age 60 years in 2013 was estimated to be 841 million or 12 % of the population. They are expected to reach two billion, or 21 % of the population, by 2050. In 2010, the US Census Bureau estimated that the elderly population over age 65 years was 40.3 million, or 13 % of the total US population. Of this group, those over the age of 90 nearly tripled in the past 30 years to 1.9 million.

This growing elderly population correlates with the increasing utilization of health services by the elderly. The 2006 National Hospital Discharge Survey conducted by the US Department of Health and Human Services (DeFrances et al. 2006) found that 38 % of inpatient beds were occupied by patients ages 65 and older compared to 20 % in 1970. A prospective study (Fulop et al. 1998) found that 44.5 % of geriatric inpatients met criteria for a psychiatric comorbidity. Studies have shown that treatment of these psychiatric comorbidities can actually impact health care spending because of the correlation between psychiatric comorbidities and length of stay in the hospital (Fulop et al. 1998). Levitan and Kornfeld (1981) also found that elderly patients receiving psychiatric consultations after being admitted for hip fractures spent 12 fewer days in the hospital and were also more likely to be discharged home rather than to a nursing home.

Table 33.1 Most frequently occurring conditions of the elderly in 2009–2011 (US Department of Health and Human Services, Administration on Aging 2012)

Arthritis (51 %)
Cardiac disease (31 %)
Cancer (24 %)
Diagnosed diabetes (20 %)
Hypertension (72 %)

Table 33.2 Common diagnoses seen in geriatric inpatients by the consultation-liaison service: (Ruskin 1985; Levitte and Thornby 1989; Grossberg et al. 1990; Scott et al. 1988)

Dementia[a]
Delirium[a]
Mood disorders (particularly depression[a])
Psychosis
Personality disorder
Adjustment disorder
Anxiety disorder

[a]Indicates the most common

33.3 Principles of Geriatric Assessment and Treatment

The geriatric population on the Consultation-Liaison service is a distinct and challenging group because high rates of medical comorbidity and biological changes associated with aging can impact treatment. Most elderly patients have at least one or more chronic medical conditions (Table 33.1). In addition, the psychiatric problems and stressors elderly patients deal with are vastly different from their younger counterparts (Table 33.2) with higher rates of dementia, delirium, and depression (Downing et al. 2013). They are also unique because of issues related to death, dying, and palliative care.

Many of the unique developmental issues facing geriatric patients can be understood from a biopsychosocial perspective (Table 33.3, Ahmed and Takeshita 1997). From a biological perspective, understanding normal age-related changes is important to distinguish them from pathological ones. For example, there are age-related cognitive changes such as reduced mental processing speed, perceptual-motor tasks, memory, and the performance of novel tasks. Vocabulary, compre-

Table 33.3 Issues facing the geriatric population

Biological aging issues	Psychological aging issues	Sociological aging issues
Age-related changes of the body and organ systems.	Changing roles and relationships: family, friends, society, occupational.	Societal and cultural attitudes towards aging.
Changes in the brain: Gross structural changes. Loss of neurons which can affect mood, behavior, and cognition. Decreased adaptive capacity. Neurotransmitter and receptor changes.	Issues and fears of dependency. Coping with physical and cognitive limitations.	Changes in socioeconomic status, marital status, occupation.
Sensory changes (vision, hearing).	Coping with loss and end of life issues. Preparing for death.	Changing and decreasing sources of support. Increasing emphasis on the extended family.
Higher rates of medical comorbidities.	Erik Erikson's developmental stage of Ego Integrity versus Despair.	Intergenerational issues including role reversals.
Changes in pharmacokinetics and pharmacodynamics. Brain having increased vulnerability to side effects of medications.		Institutionalization.

hension, knowledge, reasoning, and judgment, however, should remain the same (Albert and Moss 1988; Christensen 2001). Also, understanding the concept of young-old (65–75) versus old-old (85+) helps emphasize that elderly patients cannot all be categorized as one homogenous group. The old-old tend to have more comorbidities, functional problems, and poor prognostic conditions. From a psychological and social perspective, there are changes in self-concept and roles, particularly increasing dependency issues. Age-related biopsychosocial issues make elderly patients more vulnerable to psychiatric disorders.

The assessment of the geriatric patient should also pay attention to their medical co-morbidities as well as their level of cognition and functioning. Geriatric patients more likely have medical illnesses that coexist with or cause psychiatric symptoms. Therefore understanding patterns of onset, associated medical/psychiatric symptoms, recent changes to health status, and medications can help differentiate medical versus psychiatric causes. The presentation of psychiatric disorders may also be different than that seen in the younger population. They often present with more somatic and cognitive symptoms and may report psychiatric symptoms less often (Jeste et al. 2005).

Compared to their younger counterparts, there also may be barriers to communication due to their sensory loss (vision, hearing), slower processing time, and varying degrees of cognitive decline (Stubbe 2013). In addition, because there may be capacity issues, assessment often includes speaking with family members or caregivers. Allowing extra time for these assessments and limiting the distractions in the room can be helpful. Speaking slowly, simply, using visual/hearing devices if necessary, and having caregivers involved can also improve communication.

33.4 Pharmacological issues in the Elderly

Pharmacokinetic changes occur with both normal aging and with the diseases that increase with aging such as cardiac, renal and liver diseases (Table 33.4). In addition, age-related changes in the various organ systems render them more susceptible to the adverse effects of the medications. The changes in the brain with aging are particularly significant (Table 33.5) and have an impact on both the therapeutic and adverse effects of the drugs.

Adhering to the principles of pharmacotherapy outlined in Table 33.6 should help ensure the optimal therapeutic benefit of medications in the elderly while avoiding the risks of adverse reactions. Specific considerations in choice of agents should include caution in the use of drugs with anticholinergic effects and those with cardiovascular effects. Because of increased medical comorbidities, the elderly are at increased risk for adverse outcomes with medications. In addition, with the increased use of both prescribed and over-the-counter medications, there is a greater risk of drug–drug interactions. The choice of agents used should factor in the associated medical/neurologic comorbidity. For example, in patients with specific disorders such as Parkinson's disease, agents with minimal extrapyramidal effects such as quetiapine may be preferred.

In a prospective study conducted by Hamilton et al. (2011) of hospitalized patients 65 years or older, 26 % had adverse drug reactions. 66.6 % of the total adverse drug reactions either contributed to or were the cause of the admission. The Beers criteria was developed and updated (American Geriatrics Society 2012 Beers Criteria Updated Expert Panel 2012) to evaluate for potentially inappropriate medication use in the older adults. Examples of potentially inappropriate medications (PIMs) in the elderly include: tertiary tricyclic antidepressants (such as amitriptyline, doxepin) and first generation antipsychotics such as thioridazine and mesoridazine because of their high anticholinergic effects. Other PIMs include benzodiazepines

Table 33.4 Effects of age related physiologic changes on pharmacokinetics (Turnheim 2003)

Physiologic change	Pharmacokinetic effect
Increased body fat	Slower elimination of fat soluble drugs
Decreased total body water	Increased concentration of water soluble drugs
Decreased serum albumin	Higher percent of unbound active drug
Decreased hepatic blood flow	Delayed clearance of drugs through the liver
Decreased phase I metabolism	Decreased effectiveness of metabolism of most psychotropic drugs
Decreased renal excretion	Increased concentration of renally excreted drugs

Table 33.5 Biological changes in aging brain

Brain size decreases 10–15 %, with the most dramatic changes occurring in frontal lobes and hippocampus
Increased blood–brain barrier permeability
Decrease in horizontal dendritic components
Formation of neurofibrillary tangles and amyloid plaques
Decrease in neurons and neurotransmitters, particularly dopamine, and acetylcholine
Altered receptor sensitivity

Table. 33.6 Principles of pharmacotherapy in the elderly (Ahmed and Takeshita 1997)

1. Rule out medical etiologies for psychiatric symptoms.
2. Review the patient's medication list (both before admission and during admission) and ask about over-the-counter or herbal medications.
(a) Avoid polypharmacy
(b) Watch for drug–drug interactions
3. Consider removing psychiatric/psychoactive medications that may be causing symptoms.
4. Use behavioral interventions first and minimize use of medications.
5. If medications are used, determine what symptoms are to be targeted.
6. Ensure adequate hepatic or kidney function depending on the medication used.
7. Start low and go slow (half the usual dose and rate). Use the lowest effective dose.
8. Change one medication at a time. Utilize blood levels if possible.
9. Monitor for side effects, particularly anticholinergic/cardiovascular/hyponatremic effects, orthostasis, falls, and confusion.
10. Laboratory monitoring for adverse effects from psychotropics that could include complete blood count, electrolytes, lipid profile, fasting glucose, and EKG.

and nonbenzodiazepines, which can increase fall risk, produce prolonged sedation, and diminished cognition. It is also recommended that first and second generation antipsychotics be avoided for behavioral disturbances of dementia, unless non-pharmacological treatment has failed, due to its increased stroke and mortality risk. Medications that can cause or worsen SIADH and are thus to be used with caution are antipsychotics, carbamazepine, mirtazapine, SSRIs, SNRIs, and tricyclic antidepressants.

33.5 Specific Disorders in the Elderly

33.5.1 Dementia/Major Neurocognitive Disorders (NCD)

With the rapidly growing elderly population, dementia (renamed major NCD in DSM5) is a commonly encountered issue in the medical unit. (See Chap. 13 for further details regarding change in criteria from Dementia to Major NCD.) According to Alzheimer's Association Report (2013), 11 % of those age 65 and older have Alzheimer's Disease, and the prevalence reaches 32 % by age 85 years or older.

The presence of dementia can directly affect the care of an elderly patient in the hospital setting. A study conducted by Erkinjuntti et al. (1986) reported that patients suffering from dementia had increased lengths of stay and required more daily nursing care upon discharge than those without it. The distinction between delirium and dementia is a frequent subject of inpatient consults. Taking a proper history of patients' cognitive symptoms from a reliable caregiver and recognizing the fluctuating level of consciousness that characterizes delirium may help distinguish between the two conditions. Using a cognitive screening instrument such as the Saint Louis University Mental Status (SLUMS), Montreal Cognitive Assessment (MOCA), Mini-Mental State Examination (MMSE, although now copyrighted), or Mini-Cog may be helpful in both the diagnosis of cognitive impairment and in determining if cognition is fluctuating with serial examinations (Feliciano et al. 2013; Ismail et al. 2010) (see Chaps. 12 and 13 for additional discussion of delirium and dementia).

Table 33.7 Common behavioral problems in Dementia Patients: (Dillon et al. 2013; Wyszynski and Wyszynski 2005)

Depression, anxiety, irritability, mood lability
Apathy, social disengagement
Psychosis: hallucinations, delusions, paranoia
Physically nonaggressive behaviors:
Restlessness, pacing, wandering
Repetitive behaviors, hoarding, hiding things
Inappropriate/disinhibited social interactions and regressive behavior (neediness)
Physically agitated/aggressive behaviors:
Resistance to care
Biting, hitting, kicking
Verbally nonaggressive behaviors:
Repetitive vocalizations/questions
Verbally agitated/aggressive behaviors:
Yelling, swearing, calling out

Additionally, assisting the treatment team with problematic behaviors that arise with dementia is also a common role for CL psychiatrists. Some of these behavioral problems are included in Table 33.7.

33.5.1.1 Treatment of Dementia

When approaching treatment of behavioral problems, it is important to first investigate the following (American Psychiatric Association 1997):

1. New medical problems
2. Medication side effects, recently added medications
3. Pain issues
4. Sleep deprivation
5. Recent environmental changes (e.g., transition to hospital, changes in caregivers)_
6. "ABC's" (antecedent → behavior → consequence)

Considering these factors can aid in not only determining the etiologies for these problematic behaviors, but can also give clues to what interventions can help in the future.

Before considering pharmacologic treatment of behavioral problems, non-pharmacologic interventions must first be attempted. Some general recommendations in dealing with agitated dementia

Table 33.8 Recommendations in dealing with agitated dementia patients

Sensory interventions:
Use relaxation techniques, massage, or music during nursing activities to promote ease of care
Use glasses, dentures, and hearing aids
Provide adequate lighting
Adequate pain assessment
Light exercise
Environmental interventions:
Minimize noise in the environment
Provide adequate personal space
Limit interventions during most agitated times of the day (often times after late afternoon/early evening)
Allow safe places for patients to wander
Behavioral interventions:
Calm and soothing tones
Use simple sentence directions
Use distraction and redirection.
Minimize arguing, scolding. Understand that insight into their illness may be limited-Praise for positive behavior
Limit use of restraints for problematic behaviors
Caregiver support:
Providing caregiver support
Monitoring for caregiver burnout

patients are listed in Table 33.8 (American Psychiatric Association 1997; Cohen-Mansfield 2001; Wyszynski and Wyszynski 2005).

Side effects and drug interactions must be considered when administering medications for elderly patients with medical comorbidities. Acetylcholinesterase inhibitors such as donepezil, rivastigmine, or galantamine are routinely used for those with mild to moderate dementia, with donepezil labeled for the severe stage as well (Patel and Holland 2011). These medications frequently have gastrointestinal side effects such as nausea, vomiting, diarrhea, and anorexia therefore slow titration and administering with food can be helpful. Although less common, other side effects to consider include gastrointestinal bleeding, urinary incontinence, fatigue, muscle cramps/weakness, insomnia, abnormal dreams, tremors, seizures, dizziness, bradycardia, orthostatic hypotension, and syncope. Thus they should be used with caution in those with a history of bradycardia, heart block, sick sinus syndrome, syncope, seizure disorder, peptic ulcer disease, low body weight, or severe asthma/chronic obstructive pulmonary disease.

Memantine, an NMDA receptor antagonist can also be used to treat moderate to severe dementia. Often used in combination with cholinesterase inhibitors in the past (Tariot et al. 2004), a recent study by Howard et al. (2012) indicated no significant advantage of using combination treatment compared to donepezil alone.

The decision whether to discontinue these medications in the inpatient setting may be considered when the patient has reached the end-stage of dementia or when other medical comorbidities make continued treatment burdensome or futile. It is the role of the clinician with input from the caregiver and family members to make that assessment.

For the treatment of agitation and psychosis in dementia patients when non-pharmacologic approaches fail, medications such as SSRIs or antipsychotics may need to be used (Keenmon and Sultzer 2013; Barak et al. 2011, and Pollock et al. 2007). A greater number of studies indicate atypicals, particularly risperidone as having the best evidence of efficacy for agitation (Corbett et al. 2012). However, in the studies by Pollock (2007) and subsequently Barak (2011), there was no statistically significant difference in efficacy of citalopram or escitalopram respectively compared to risperidone.

The FDA has, however, recently issued warnings about antipsychotic use in dementia patients. In 2003 a safety alert was issued when patients participating in risperidone trials were found to have increased incidence of cerebrovascular accidents (FDA 2003). Other sources, however, indicate this is probably a class effect (Corbett et al. 2012; FDA 2003). Later in 2005, the FDA issued an advisory declaring an increase in overall mortality in elderly patients with dementia being treated with any atypical antipsychotic medication (FDA 2005). The advisory then expanded to include typical antipsychotics in 2008 with typicals likely having a greater mortality risk (FDA 2008; Wang et al. 2005). Of note, none of these agents are approved by the FDA for treating

psychotic and behavioral symptoms associated with dementia.

33.5.2 Delirium

Delays in recognizing and treating delirium can have significant complications from both a medical and economic standpoint. Nearly 12.5 million elderly patients are admitted to US hospitals each year (Inouye 2006). The development of delirium complicates at least 20 % of these hospitalizations, contributing to over 49 % of all hospital days and increasing hospital costs by as much as $2,500 per patient. These effects in the elderly are further magnified in the postoperative setting (15–53 %), in the intensive care setting (70–87 %) and in the end of life setting where the incidence is estimated at nearly 83 %. A meta-analysis by Witlox et al. (2010) found that there are long term consequences to delirium post-discharge. Those with delirium were at higher risk for mortality (38 % compared to 27.5 % for controls), institutionalization (33.4 % vs. 10.7 %), and dementia (62.5 % vs. 8.1 %).

Elderly patients are more prone to delirium because of the increased prevalence of risk factors such as chronic medical illness, dementia/cognitive impairment, sensory impairment (visual and hearing), structural brain disease, age-related central nervous system changes, and changes in pharmacokinetics and pharmacodynamics (Inouye 2006; Goy and Ganzini 2003). The presentation of delirium in the elderly shares many of the same characteristics as in the younger population (see Chap. 12 for DSM-5 diagnostic criteria for delirium).

Although priority should always be placed on non-pharmacological treatment and on treating the underlying etiology, a meta-analysis by Meagher et al. (2013) found 75 % clinical response rate in those with delirium that received short-term, low dosage antipsychotics. Historically treatment guidelines have generally recommended haloperidol when an antipsychotic is considered for agitation or psychosis due to its minimal anticholinergic effects, its wide therapeutic window, and its multiple routes of delivery. This meta-analysis, however, found no difference in response rates between atypicals (such as risperidone, olanzapine, and quetiapine) versus haloperidol except for the later having higher extrapyramidal rates.

If haloperidol is used in elderly patients, haloperidol can be administered at 0.25–1.0 by mouth (po) twice to three times daily with 0.25–1.0 mg po or intramuscularly (IM), repeated every 30–60 min if needed (Mittal et al. 2011). Similarly, dosing schedules were also reported for the atypicals as well. It should be noted that for delirium attributed to seizures or alcohol/sedative withdrawal, benzodiazepines are the first line agents for therapy. Lorazepam may have advantages for the elderly because of its rapid onset, shorter ½ life, more predictable bioavailability, lack of active metabolites, and decreased risk of accumulation (see Chap. 20 for a discussion of the controversy over lorazepam versus long acting benzodiazepines for alcohol withdrawal).

There have also been studies that have looked into whether prophylactic antipsychotic use would be beneficial for those at high risk for delirium. A meta-analysis by Teslyar et al. (2013) found that prophylactic antipsychotics had a 50 % reduction in relative risk for delirium compared to placebo.

33.5.3 Mood Disorders

33.5.3.1 Depression

The prevalence of major depression is higher in disabled, medically ill elderly patients at 10–12 % compared to their community-dwelling counterparts with an even larger number having less severe forms of depression (Alexopoulos and Kelly 2009). Elderly patients that have depression combined with chronic medical issues have higher disability rates, cost of inpatient services, and rates of readmission, nursing home placements, and mortality (Ellison et al. 2012; Shanmugham et al. 2005). Geriatric patients have unique risk factors for depression that are discussed in Table 33.9. Their clinical presentation of depression can also be different

Table 33.9 Risk factors for depression in the elderly: (Burke and Wengel 2003)

Death of a spouse or loved one (increased risk by 24.3 over 1 year)
Medical illness/injury (increased risk by 3.0 over 1 year) including: Parkinson's disease Cardiovascular disease Alzheimer's disease Cerebrovascular disease (including stroke and white matter infarcts)
Disability and functional decline (increased risk by 4.2 over 1 year)
Limited social support

Table 33.10 Differences in depressive characteristics in the elderly compared to younger populations: (Alexopoulos et al. 2002; Alexopoulos et al. 2005; Burke and Wengel 2003; Wise and Rundell 1996; Shanmugham et al. 2005)

"Masked" depression: patients that appear depressed but deny that they are depressed.
Higher threshold for reporting depressive symptoms.
Less likely to express feelings of guilt or suicidal ideations
Less personality disorders or family history of depression.
More anorexia, weight loss, insomnia, anger, psychotic symptoms, melancholic symptoms.
More cognitive impairment/executive dysfunction (with more anhedonia, psychomotor retardation, poorer insight)
More structural brain abnormalities such as ventriculomegaly and white-matter hyperintensities (particularly frontal/temporal regions)
Higher rate of medical comorbidities, mortality from medical illness or suicide
More preoccupation with somatic symptoms
Poorer response to treatment

as they may complain of more somatic symptoms and sometimes deny feeling depressed. Table 33.10 describes some of the differences in characteristics of geriatric depression.

Some medical illnesses have been implicated in causing depression in the elderly, including cerebral vascular disease and dementia. Greater than 30 % of stroke patients develop depression (Hackett et al. 2005) but the relationship between vascular disease and depression is actually thought to be bidirectional—vascular disease predicting the onset of depression and preexisting depression predicting the onset of stroke and cardiovascular disease (O'Brien et al. 2006). Major depression has been found in 20–25 % of those with dementia with another 20 % categorized as having other depressive syndromes (Burke and Wengel 2003). The difficulty in diagnosing depression in dementia patients lies in the fact that the diagnostic process can often be hindered by poor cognitive functioning and many of the symptoms of dementia and depression overlap. Further complicating early detection is the fact that depressive symptoms may not fit the diagnostic criteria for a major depressive disorder and may be more intermittent and associated with other psychological and behavioral disturbances. Because of this diagnostic dilemma, alternative approaches have been aimed at (1) using an "inclusive approach" where symptoms are counted regardless of the presumed etiology of those symptoms or (2) focusing primarily on the "psychological symptoms" of depression. The Geriatric Depression Scale has been validated for inpatients with mild-moderate cognitive impairments and medical comorbidities with its emphasis placed on cognitive symptoms of depression rather than somatic (Ellison et al. 2012). In addition, features that are more suggestive of depression rather than dementia include (1) acute onset of symptoms, (2) improvement with antidepressants, and (3) complaints of memory problems exceeding actual memory impairment during neuropsychological testing (Small et al. 1986). While it is helpful to make the distinction of cognitive impairment due to depression because of potential treatment with antidepressants, from a long term perspective these patients remain at an increased risk of developing irreversible dementia later on (Ownby et al. 2006).

Treatment of depression in the elderly

While selective serotonin reuptake inhibitors (SSRIs) have been widely used as first line agents, there is no specific evidence demonstrating superior efficacy of any particular class of antidepressants for late-life depression (Ellison et al. 2012). Citalopram and escitalopram were often used in the past for geriatric patients

because they carried the lowest risk of drug interaction (Burke and Wengel 2003). In 2012, however, the FDA came out with a safety warning stating citalopram should not be dosed higher than 20 mg in those over the age of 60 because of increased risk of QTc prolongation and should avoid combining with other QTc prolonging medications (FDA 2012). Other risks to consider with SSRIs include hyponatremia, falls, gastrointestinal intestinal side effects, and risk for bleed (Allan and Ebmeier 2013; Coupland et al. 2011).

Reviews of tricyclic antidepressants (TCAs) versus SSRIs found that TCAs had different side effect profiles and possibly higher withdrawal rates due to side effect experience but with mixed results (Cochrane 2006, Shanmugham et al. 2005). The potential adverse effects however, may be more serious for TCAs including higher risk toxicity in overdose as well as anticholinergic (dry mouth, constipation, urinary retention, cognitive impairments) and cardiovascular side effects (Ellison et al. 2012).

Mirtazapine is a good alternative when SSRIs are contraindicated or not tolerated, especially for patients with anorexia or insomnia (Allan and Ebmeier 2013). It also has a weaker association with hyponatremia (Jung et al. 2011).

Treatment of non-major depression such as dysthymia, and minor depression has been shown to have moderate benefits (Burke and Wengel 2003). In terms of treatment of geriatric psychotic depression, expert consensus guidelines recommend the use of an antidepressant medication in addition to an antipsychotic medication or electroconvulsive treatment (ECT) (Shanmugham et al. 2005).

In the elderly ECT has been recommended as an initial treatment for those with (1) psychotic depression, (2) catatonia, (3) severe depression with functional impairment, (4) medical comorbidities, or (5) acute suicidality or inadequate nutrition where a quick response is needed (Ellison et al. 2012; Shanmugham et al. 2005). Although there are no absolute contraindications, relative contraindications in the elderly are similar to younger patients including cerebrovascular conditions such as aneurysms, recent stroke, space occupying lesions, increased intracranial pressure, cardiovascular comorbidities (uncontrolled hypertension, recent myocardial infarction), as well as patients who are deemed high anesthetic risks (Ellison et al. 2012; Greenberg and Kellner 2005). Another consideration in the elderly is the risk of transient anterograde and retrograde amnesia as well as less frequent persistent cognitive disturbances.

Although there are few studies with elderly patients, transcranial magnetic stimulation (TMS) shows promise and appears safe in those with late-life depression (Jorge and Robinson 2011). Because it is a noninvasive outpatient procedure without the use of anesthesia and limited complications, it is a viable alternative for the frail elderly.

In patients with shortened life expectancy (<2 months), psychostimulants such as methylphenidate are recommended (Goy and Ganzini 2003). Psychostimulants can also be used adjunctively for the depressed, apathetic, medically ill geriatric patient until the primary antidepressant can reach maximal efficacy; however, evidence is limited (Ellison et al. 2012). Response to psychostimulants can be seen in 2 days and discontinuation side effects are uncommon (10 %), although blood pressure and pulse should be monitored because of the possibility of tachycardia and hypertension (Goy and Ganzini 2003; Rosenberg et al. 1991). The starting dose of methylphenidate can be 2.5 mg every morning with breakfast and can be increased by 2.5–5 mg every 2–3 days (Jacobson et al. 2002). A typical daily dose is between 5 mg BID and 10 mg BID. Drug interactions have been noted with warfarin, tricyclic antidepressants, MAOIs, and venlafaxine. Tachycardia and hypertension can occur when combined with the latter agents.

Elderly Suicide

It has been estimated that 20–50 % of elderly patients that commit suicide see their general practitioner within the week preceding their suicide (Cattell 2000). The difficulty in evaluating elderly patients for suicide is that they give fewer warnings, use deadlier methods (71 % using firearms) and have smaller attempts to completion ratios (4:1 versus 200:1 in adolescence). Because

Table 33.11 Risk factors for suicide in the elderly: (Cattell 2000; Burke and Wengel 2003; Shanmugham et al. 2005)

Male: Age > 75
Widowed/divorced/single, social isolation, bereavement
Psychiatric illness Prior suicide attempts Depression, alcohol, "vulnerable" personality traits Hopelessness best predicts suicidal ideation in the presence of depressive symptoms
Physical illness Inadequate treatment of depression: Most studies indicate an inadequate use of antidepressant use prior to death (around 10–25 %)
Access to firearms (71 % use guns)

Table 33.12 Differential diagnosis of manic symptoms in older adults: (Burke and Wengel 2003)

Hyperthyroidism
Sympathomimetic agents, stimulants, and steroids
Frontotemporal dementia (which can present with changes in behavior, disinhibition)
Cerebrovascular disease particularly with lesions in the right hemisphere
Various neurologic diseases

of these alarming statistics, earlier detection and treatment is advised to decrease the rates of suicide (refer to Table 33.11 for Risk factors for elderly suicide).

33.5.3.2 Bipolar Disorder

When an elderly patient presents with manic symptoms but has an unclear history of bipolar disorder, it is important to first rule out medical etiologies for those manic symptoms such as those listed in Table 33.12. For those with a prior diagnosis, the natural history of bipolar disorder is for the frequency and duration of affective symptoms to increase with age. Elderly bipolar patients with manic symptoms frequently present differently from their younger counterparts, often typified by a mixed state (Burke and Wengel 2003). They tend to be more irritable and argumentative with less euphoria and racing thoughts. Geriatric patients also have higher rates of psychotic symptoms and cognitive deficits, often mimicking delirium.

In terms of treatment of acute mania, lithium is an option; however, there is a higher risk for lithium toxicity in the elderly including cognitive impairments, ataxia/gait abnormalities, worsening kidney dysfunction or urinary frequency, and hypothyroidism (Sajatovic and Chen 2011). Drug interactions are more likely to be seen in the elderly because of higher rates of medications such as nonsteroidal anti-inflammatory drugs, angiotensin-converting enzyme inhibitors, calcium antagonists, and thiazide/loop diuretics.

Valproate is another option for geriatric mania; however, the free and total serum valproate level should also be ordered since protein displacement can occur with medications such as warfarin, digoxin, phenytoin, and aspirin. Carbamazepine is another option but there are no controlled studies in the geriatric population.

While atypical antipsychotics (except clozapine) are FDA approved for bipolar mania, their use in geriatric patients is limited and as described previously, carry risks including weight gain, metabolic abnormalities, increased risk of falls, sedation, extrapyramidal symptoms, and neuroleptic malignant syndrome.

For geriatric bipolar depression, lamotrigine, quetiapine, and olanzapine are possible options. Maintenance therapy may include lamotrigine, olanzapine, aripiprazole, or quetiapine. ECT is used in severe mania unresponsive to medications or in those who are acutely suicidal or nutritionally compromised.

33.5.4 Psychosis

In a geriatric patient without a history of psychosis, it is important to rule out medical or medication etiologies of psychosis by reviewing medication lists, performing a neurologic exam, and obtaining laboratory tests such as blood counts, liver function tests, basic chemistry panel, vitamin B12/folate levels, serum TSH, RPR, and imaging studies including MRI or CT scan of the brain.

For the elderly patient with schizophrenia, a major difference when compared with the younger patient with schizophrenia lies in the reduction of positive symptoms and an increase in negative symptoms and cognitive deficits (referred to as "burning out").

For those patients without a prior history or evidence of a medical etiology, the diagnosis of late onset psychosis can be entertained. Symptoms often begin after 40 years of age and present with delusions (mostly persecutory) and hallucinations. There is a higher prevalence in females, and these patients have often functioned moderately well in the past (Agronin and Maletta 2006). They present less often with thought disorders, negative symptoms, and severe cognitive impairments, and they may respond to lower doses of antipsychotics (Jeste et al. 2005).

Patients with various dementias can also develop psychotic symptoms. In these cases, the onset of psychosis usually occurs after or coincides with the onset of dementia (Jeste et al. 2005). While patients with schizophrenia do have generalized cognitive impairments, their learning capacity is relatively intact, unlike patients with dementia.

33.5.4.1 Treatment of Psychosis in the Elderly

Rather than typical antipsychotics, atypical antipsychotics are the treatment of choice due to efficacy and superiority of side effect profiles. Atypical antipsychotics can be used to treat negative symptoms and have less EPS (to which the elderly are more susceptible), but their use requires vigilance for orthostatic hypotension, sedation, and impaired glucose tolerance/diabetes, and FDA concerns for increased mortality and cerebrovascular accidents in patients with dementia (Carson et al. 2006).

33.5.5 Anxiety disorders

Common themes of anxiety in the geriatric medically ill patient include worries about physical illness and their impact on quality of life including pain, disability, and the possibility of death. These fears can often be exacerbated by feelings of isolation and dependence in the hospital environment.

In certain instances, it is in the hospital setting that an underlying anxiety disorder is exacerbated. In other instances, anxiety symptoms are secondary to a medical etiology including various diseases, medications, or substances. It is therefore important to differentiate the causes by evaluating for: (1) history of anxiety symptoms; (2) current medications especially analgesics, cold remedies, anticholinergics, herbal medications, and vitamins; (3) history of drug or alcohol use; (4) medical history including endocrine diseases (thyroid/diabetes), pheochromocytoma, cardiac/pulmonary disease; and (5) family history of anxiety. Various rating scales including HAM-A, Beck Anxiety Inventory, Hospital Anxiety and Depression Screen, and Brief Symptom Inventory are tools to help screen for and monitor the diagnosis (Agronin and Maletta 2006; Goy and Ganzini 2003). A combination of psychotherapy (cognitive–behavioral approach) and medications are appropriate interventions for those motivated and have the cognitive capacity to engage in therapy. For those receiving palliative care, the focus of therapy is teaching anxiety management skills such as progressive muscle relaxation, controlled respiration, and guided imagery rather than insight-oriented psychotherapy. Reassuring patients that their symptoms will be addressed, that familiar nursing staff members will be available, and that their spiritual needs will be met by offering pastors services, can help alleviate anxiety in the medically ill elderly (Goy and Ganzini 2003). In addition to therapy, benzodiazepines are considered first-line treatment but caution is used because they can cause confusion and falls in the elderly and can potentially suppress respiration in patients with pulmonary disease or those on high doses of narcotics (Goy and Ganzini 2003). If longer term anxiety treatment is needed, then the traditional use of SSRIs or SNRIs would be more appropriate.

33.5.6 Substance Use Disorders/ abuse/dependence

Alcohol and substance abuse is often unrecognized in the elderly. According to community-based epidemiologic studies, the 1-year prevalence rate for alcohol abuse and dependence is 2.75 % for elderly men and 0.51 % for elderly women. The prevalence rates are higher, however, in primary care settings,

where at-risk drinking has been estimated to be 5–15 % (Oslin 2005).

The prevalence of substance use disorders, however, may actually be underestimated because of limited applicability of DSM-5 criteria to the geriatric population. For example, elderly patients may have difficulty fitting the "tolerance" criteria because age-related changes in pharmacokinetics and pharmacodynamics lower drugs tolerance. In addition, the criteria addressing the inability to fulfill occupational obligations may be less applicable because a large portion of these patients no longer work (Jeste et al. 2005). At-risk drinking may also go unrecognized because physicians may not realize that the allowable intake for an elderly patient is different than for a middle-aged adult. The National Institute on Alcohol Abuse and Alcoholism and the Center for Substance Abuse Treatment recommends that patients ages 65 and older should consume no more than one standard drink per day or seven standard drinks per week (Oslin 2005).

While the geriatric population can face similar substance abuse problems as their younger counterparts, a particularly unique problem facing the elderly is the misuse of prescription and over-the-counter medications. The two most commonly misused prescribed drugs by geriatric patients are benzodiazepines and opioids, both of which can cause problems of tolerance, withdrawal, and cognitive changes. According to Oslin (2005), approximately 32 % of community-dwelling geriatric patients take analgesics and 10.4 % take benzodiazepines. In addition, geriatric patients often use over-the-counter cold and allergy medications which can increase the risk of delirium because of their anticholinergic effects.

Helpful diagnostic tools to assess alcohol use disorders in the elderly include: (1) the CAGE questionnaire in which one positive response is an indicator of a disorder, and (2) The short Michigan Alcoholism Screening Instrument—Geriatric version (Beresford 1992; Ewing 1984). In addition to assessing for substance use, it is important to assess for alcohol related problems such as (1) medication interactions, particularly warfarin and digoxin, (2) medical problems such as uncontrolled diabetes, poor nutrition, cardiovascular disease, hypertension, osteoporosis, hyperuricemia, and peripheral neuropathy, (3) insomnia, (4) withdrawal, and (5) accidents/falls (Agronin and Maletta 2006). To assess for potential abuse of opioids or benzodiazepines, the Dupont Checklist is a useful tool (Blow et al. 1992).

Treatment of alcohol and substance withdrawal in the elderly is similar to regimens used in younger populations. Although elderly patients have been shown to have a longer duration of withdrawal symptoms, there is no evidence suggesting that older patients are more prone to alcohol withdrawal or need a longer duration of treatment for withdrawal symptoms (Oslin 2005). Treatment with a smaller than usual dosage of short-acting benzodiazepine such as lorazepam has been recommended in treating alcohol withdrawal in the elderly because of the increased half-life in this populations and risk of oversedation (Caputo et al. 2012).

For the treatment of opioid withdrawal, symptomatic treatment is used for mild to moderate withdrawal (Agronin and Maletta 2006). Methadone or buprenorphine can be used with caution for elderly patients with significant opioid addiction.

For non-pharmacologic maintenance treatment of substance abuse, day programs and senior centers can be useful. According to Agronin and Maletta (2006), age-related group activities have been found to be superior to mixed-aged group activities.

In terms of pharmacological agents for alcohol, naltrexone has been shown to be safe and beneficial in older adults (Agronin and Maletta 2006; Caputo et al. 2012). It now is available in an extended release injection. This may be beneficial for those who forget to take their medications. It should, however, be avoided in opioid dependent patients or those currently taking opioids for pain. Treatment can be initiated at 25 mg daily and can either be maintained or increased to 50 mg daily. Studies on acamprosate have indicated some efficacy in adults; however, there are no studies focused on the elderly (Caputo et al. 2012). Disulfiram use in the elderly is generally not recommended because of the risk that

the patient may drink alcohol while taking it, especially in those with hepatic or cardiovascular disease.

33.6 Specific Issues in Caring for the Elderly

33.6.1 Palliative Care/End of Life Issues

Palliative care has been extensively covered in Chap. 27, but it is an important topic when working with the medically ill geriatric population. It is important to recognize that progressively ill patients also have progressively higher rates of major depressive disorder. The prevalence of depression during terminal illness has been estimated to be between 1 % and more than 40 % with approximately 25 % of cancer patients developing a significant mood disturbance (Goy and Ganzini 2003). Addressing depression even in this setting is crucial because patients who are depressed tend to make more restricted advance directives and change them after remission of their depression (Ganzini et al. 1994). In those with end-stage cancer, pharmacological treatment approach is symptom management and to use medications with lower drug–drug interactions since many chemotherapy medications are metabolized through CYP3A3/4 (Rosenstein 2011). Mirtazapine is particularly useful in this population because of its limited drug interactions, weight gaining/sedating properties, and antiemetic effects since it is a partial 5HT3 receptor antagonist.

Another key end of life issue is differentiating hypoactive delirium from depression since prescribing an antidepressant or psychostimulant can worsen delirium. In the last days of life, the prevalence of delirium can reach 90 %. Although it would be tempting to see a calm, confused state at the end of life as desirable, hypoactive delirium can be distressing to patients and their families. It can also hamper their ability to tell their loved ones goodbye.

Focus should also be given to caregiver stress. Support can be provided through inpatient staff (social workers, pastoral care, nurses, and psychiatrists) and community resources. Helping families understand what to expect through each stage of the patients' course, up the final hours of life, can help alleviate distress. It can also serve to improve communication with the primary care provider (Goy and Ganzini 2003).

33.6.2 Capacity

Capacity is a common consultative question for geriatric patients on the medical and surgical unit. In order to be deemed as having capacity, the patient must demonstrate that they have sufficient understanding to make or communicate responsible decisions concerning one's condition (Appelbaum and Grisso 1988). This is not to be confused with competence, which is legally determined.

Prior to interviewing the patient, it is important to learn the facts of the situation from the treatment team and whether the patient has been informed of these facts. The treatment team should also understand that just because a patient lacks capacity, does not mean that they cannot later regain capacity. This is particularly true with reversible conditions such as delirium, psychoses, and mood disorders.

For a person to have capacity, there are four basic principles which state that the patient must: (1) communicate a choice, (2) understand the information given, (3) understand the situation and its consequences, and (4) manipulate the information rationally (Appelbaum and Grisso 1988). Table 33.13 lists specific question prompts to these principles. A sliding scale approach can be taken to making a determination of capacity. This means that a lower standard can be used if a patient refuses a high risk to low benefit procedure but a higher standard is used if a patient refuses a low risk high benefit procedure.

If a patient has been determined to lack capacity, then their advanced directives can be activated and their durable power of attorney (DPOA) can begin to be involved in making decisions. If there are no advanced directives, then a surrogate decision maker can be sought, either by

Table 33.13 Capacity questions: (based on Appelbaum and Grisso 1988)

1. Communicate a consistent choice: Have you decided whether or not to go along with your doctor's suggestion for treatment? Can you tell me what your decision is?
2. Factual understanding of issues:
Please tell me in your own words what your doctor told you about:
(a) The nature of your condition
(b) The recommended treatment
(c) Benefits and possible risks (or discomfort) from the treatment
(d) Alternative treatments that could be used and their risks/benefits
(e) The possible risks and benefits of no treatment at all
You mentioned that your doctor told you of a ___% chance the (named risk) might occur with the treatment. How likely do you think the occurrence of (named risk) might be?
3. Appreciation of the situation and consequences: Please explain to me what you really believe is wrong with your health now? Do you believe that you need some kind of treatment? What do you believe will happen if you are not treated? Why do you think your doctor has recommended (specific treatment) for you?
4. Rational manipulation of information: Tell me how you reached the decision to accept/reject the recommended treatment? What were the factors that were important to you in reaching the decision? How did you balance those factors?

having a capable patient designating someone, or by having involved parties (such as family members) stepping in. If a surrogate decision maker is not available, then a guardian can be appointed by the court once there is a legal determination of incompetence.

33.6.3 Functional Ability and Disposition Planning

In the elderly, a key focus is evaluating and optimizing function and quality of life, and not just illness or treatment focus. In the hospital every effort should be made to optimize functional ability, as the elderly are vulnerable to loss of function due to aging physiology as well as due to medical, psychiatric, and iatrogenic factors (Creditor 1993). The level of function is determined by assessment of basic activities of daily living (ADLs) and instrumental ADLs (IADLs). Basic ADL evaluation focuses on activities such as feeding, bathing, toileting, grooming, and transfers. Evaluation of IADLs focuses on cooking, cleaning, shopping, use of telephone, and managing of finances and medications. This functional assessment will often determine the level of care an older person may need. Once this is determined, it is important to involve family and caregivers in the patient's life in the decision making process about what additional supports they may need including future living arrangements. There should be a balance between patient safety and respect of their autonomy. Decisional capacity assessment may be needed if the patient does not appear to show good judgment decisions about living arrangements or following through with medical recommendations.

33.6.4 Elder Abuse and Undue Influence

A possible reason for consultation to psychiatry may be to provide an evaluation of elderly abuse. According to a systematic review by Cooper et al. (2008), 6 % of older persons reported abuse in the past month. Although reporting of suspected elder abuse was mandated in 44 states, actual reporting remains low. According to the 2004 survey of state adult protective services, of those states that separated out those aged 60+, health care professionals (not including social services agencies) made 14.5 % of the reports with physicians making only 1.4 % Teaster et al. (2007).

According to the National Aging Resource Center on Elder Abuse (NARCEA) there are seven suggested categories of elder abuse which include the following listed in Table 33.14. Undue influence (UI) is another concern when dealing with elderly, particularly those that are dependent or impaired. UI becomes an issue when "caregivers use their role or power to exploit the trust, dependency, or fear of another to

gain psychological control over the patient's decision-making, usually for financial gain" (Quinn 2002). Physicians should be aware of signs of elderly abuse (Table 33.1) and report any incidents according to state laws.

33.6.5 Discussion of vignette

The vignette described earlier illustrates some of the challenges of caring for elderly patients, including recognizing delirium superimposed on dementia and the various possible etiologies for delirium including urinary tract infections, pain, anticholinergic medications and hyponatremia. Agitation could occur from the delirium, as well as from pain secondary to an occult hip fracture from a fall, in a vulnerable older woman with possible osteoporosis. In addition, it is important to recognize the potential adverse effects of psychotropics in the elderly such as extrapyramidal symptoms with antipsychotics, and hyponatremia with selective serotonin reuptake inhibitors. Also, being aware of increased fall risk and QTc prolongation issues with both antidepressants and antipsychotics is important. One also has to be mindful of potential psychiatric adverse effects from medical treatments such as ciprofloxacin. In addition, ciprofloxacin may add to the QTc prolongation that the patient has. Because of changes in cognition, extra consideration is needed to look for signs of elderly abuse and capacity to make medical decisions. In this case, the observable bruises and fall should raise the index of suspicion for abuse and neglect. Caregiver burden in a patient with agitation increases the risk for abuse.

Table 33.14 Categories of elder abuse (NARCEA) (Kleinschmidt 1997)

Physical
Psychological/Emotional: insults, humiliation, threats to institutionalize or abandon
Financial: theft, misuse of funds, and coercion (e.g., changing a will)
Neglect: basic care not provided
Self-neglect: conduct by a patient that threatens his/her own health/safety
Sex abuse
Miscellaneous: rights violations, medical abuse, and abandonment

Table 33.15 Observations suggestive of elder maltreatment (Kleinschmidt 1997)

General	Caregiver	Patient
Medication problems such as duplications and questionable dosages	Indifference towards patient Recent conflicts	Fearful of caregiver or indifferent Recent conflicts
Numerous hospitalizations or health care visits with different physicians and hospitals.	Mental health problems: History of alcohol or drug problems History of violence or legal problems Depressed	Mental Health problems: Depressed
Delays in seeking medical care.	History is vague or does not corroborate with evidence Attempts to prevent patient from interacting with health care providers	History is vague or does not corroborate with evidence, reluctant to answer questions
Unexplained injuries/fractures, labs/radiographic inconsistencies	Provides poor supervision or noted abandonment	
	Overly concerned with medical costs, financially dependent on patient	
	Limited understanding of patient's medical problems	

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