

Physician's Guide for Surgical Management of Adult Patients with Mental Retardation and Developmental Disabilities (MR/DD)

1. Basic Facts for the Surgeon

Delirium is temporary confusion produced by medical problems, medications, and other causes (*For A Complete Physician Guide, See "The Physician's Guide to Delirium- DDMED 71"*) **{1}**. Adult patients with mental retardation or developmental disabilities may appear on the surgical service via the emergency room as routine admissions or as in-hospital transfers. Persons with MR/DD may be delirious on admission to the hospital and most delirium is unrecognized by the admitting Emergency Department (ED) doctor (95%) for persons with dementia **(2)**. Elderly individuals have a higher rate of mortality and institutionalization at six months following onset of dementia **(3)**. Similar rates are expected in frail patients with MR/DD. Early recognition allows the surgeon to adjust management strategies to minimize confusion as well as to advise families about the additional expected morbidity and mortality associated with delirium. Delirium does occur in children or adolescents with MR/DD; however, this summary does not include information on these age groups.

Delirium is a common condition in all patients with abnormal brains, including those with mental retardation. Mental retardation is produced by over 250 structural or developmental, i.e., migrational, abnormalities of the brain. Few published studies examine the risk of delirium in MR/DD population; however, the rate probably equals or exceeds that seen in persons with dementia or other neurological disorders. A similar lack of data is available on rates of inappropriate medication prescription or adverse drug reactions; however, anecdotal experience indicates that these problems are more common in persons with MR/DD than the general population **(4), (5)**. The elder person with MR/DD is at risk for receiving prescriptions cited on the Beers list of inappropriate medications for elders including long, half-life benzodiazepines,

diphenhydramine, anticholinergic preparations and others. The Beers list is a publication that defines consensus guidelines for inappropriate use of medications in elders (4). The assessment of delirium in the MR/DD person should be adjusted to the level of intellectual disability. Persons with mild to moderate disability may demonstrate appreciable loss of cognitive function in response to delirium. The severe MR/DD person may only manifest basic behavioral changes such as alterations of consciousness, failure to eat or failure to respond. Any abrupt change in the cognitive, psychiatric behavioral function of the patient with MR/DD warrants a consideration for delirium.

2. Pre-Operative Assessment

Surgical management of persons with MR requires specific pre-operative and post-operative care to avoid serious complications and facilitate rapid discharge (9). Patients with behavioral problems and mental retardation can experience significant, unexpected, avoidable complications, e.g., falls, non-compliance, poor nutrition. Patients with MR/DD may appear on the surgical service for elective procedures or via the emergency room. Early recognition allows the surgeon to adjust management strategies to minimize confusion as well as to advise families about the additional expected morbidity and mortality associated with delirium. Post-operative delirium is also common in persons with MR/DD, normal or demented elders, or intact persons with neurological disease. Healthcare for the patient with MR/DD may be complicated by communication problems, medications that mask symptoms, such as antiepileptics (6), mortality problems, and unusual conditions produced by complex genetic disorders.

Persons with mental retardation receive less medical care and suffer from more unrecognized health problems. These patients are more likely to have untreated dental disease that may complicate anesthesia (7), (8).

3. Post-Operative Care

A. Risk Factor. Post-operative delirium may be a common complication in patients with MR/DD or other cognitive deficits that significantly increase mortality and morbidity associated with surgical procedures. Published studies show post-operative delirium occurs in up to 90% of

certain surgical procedures for patients with dementia, e.g., hip replacement (10). Patients with mild MR/DD may develop severe confusion and behavioral problems in the post-operative period.

The risk for post-operative delirium may be based on numerous variables including: 1) severity of MR/DD, 2) past history of delirium, 3) psychiatric complications associated with the MR/DD, 4) level of medical frailty, and 5) stressfulness of the surgical procedure. Post-operative delirium may become a significant problem for any person with MR/DD who will require complex post-operative care or rehabilitation, e.g., weaning from the ventilator, physical rehab following hip replacement, etc. This might also be caused by incomplete sharing of records, leading to missed medications.

B. Management. Management of post-operative delirium begins in the pre-operative assessment and discussion with family (11), (12), (13). The pre-operative history should be obtained from both the patient and family caregivers. Patients with MR/DD may provide inaccurate or incomplete clinical histories. Patients with MR/DD are at greater risk for poor hydration and unrecognized medical problems because patients may have poor pre-operative oral intake and under-report symptoms like pain or weakness. Nutritional depletion occurs in nursing home residents with MR/DD (23-85%) and these individuals are commonly malnourished on admission. Poor medication compliance is common in older MR/DD residents and pre-op blood work should include therapeutic levels, e.g., digitalis, coagulation values, etc., to exclude under- or over-medication. Many patients with MR/DD have seizure disorders and preoperative blood monitoring may avoid post-operative seizures produced by low anticonvulsant levels.

Anesthesiologists and ICU staff should monitor for potential post-operative confusion or severe behavioral problems. Delirious patients with MR/DD may attempt to climb out of bed or remove tubes, e.g., extubation, chest tube removal, etc. Appropriate nursing supervision is necessary to monitor these patients at all times. The presence of mental retardation should not substantially reduce the level of consciousness of a mild or moderately impaired patient who is alert under normal circumstances. Significant alteration of consciousness in a post-operative patient with MR/DD signals a new medical or neurological event. Mental retardation should not affect

physical strength or cardiovascular function in a previously healthy person. New onset weakness or autonomic instability implies new medical problems.

Many patients with MR/DD have sensory impairments that require specific assistance, e.g., hearing aids, assistive communications devices. Patients with MR/DD may be less likely to comply with preventive spirometry, early ambulation, and extubation because of fear, distress, and communication problems. Patients with preoperative spasticity require specific considerations for turning and positioning to avoid post-operative decubiti. Stage 2 decubiti can occur after 24-hours of excessive pressure produced by inadequate rotational positioning.

Recovery room and ICU nursing staff will need to re-explain each procedure every time an intervention is performed with the patient, e.g., suctioning, positioning, etc. All nursing staff should know that the patient requires specific care.

Medications are common causes of post-operative delirium. Specific narcotics, e.g., Talwin, Demerol, produce significant risks for post-operative confusion (4), (14), (15), (16), (17). Long-acting benzodiazepines, e.g., Librium, Valium, should be avoided to prevent toxic accumulation in the patient with MR/DD. Specific pain medicines, like Darvon, have an analgesic effect equal to that of Tylenol but less than some other compounds, e.g., codeine. Although its analgesic quality is low, Darvon's high level of euphoria can produce confusion in persons with MR/DD. Pain management is as important to the patient with MR/DD as to the cognitively intact patient. Persons with MR/DD experience pain at the same level as that of normal individuals; however, they may manifest pain by agitation, abnormal behaviors or non-compliance with recovery room staff.

The post-operative patient with MR/DD is at risk for dehydration and secondary infections because of problems with eating, drinking, and using assistive devices (18), (19), (20). These complications can be avoided through careful attention to detail by nursing staff. The post-operative patient with MR/DD who appears stable for several days and then develops acute onset of agitation or confusion may suffer from a new medical problem producing delirium, e.g., UTI, pneumonia, etc. These individuals require a careful medical evaluation and minimal sedation.

The post-operative management of agitation or confusion in a patient with MR/DD requires careful observation by the nursing staff and the judicious use of antipsychotic medications (21), (22). Many new, second or third generation antipsychotic medications have limited injectible forms and older antipsychotics may be used to include Haldol and Prolixin in small, modest doses, e.g., Haldol 1mgm IM q 4hrs. These medications are not toxic when used for short durations; however, they may produce stiffness or sedation. Persistent symptoms of delirium can be treated with a short course of oral medications (See Table 2). Medications, such as Ativan, increase post-operative confusion in the brain damaged patient and are not recommended as a first choice drug (See Table 1).

Rehabilitation. Successful rehabilitation of a patient with MR/DD is a challenge to the rehabilitation medicine specialist. Persons with MR/DD require more attention by staff and adaptation of rehab programs to compensate for cognitive deficits. Patients with MR/DD may not remember instructions, fail to use assistive devices, e.g., walkers, and require alternative means of communication. Staff should be trained to understand their cognitive deficits and adjust rehab programs to meet the needs of these cognitively impaired patients. Caregivers of individuals with MR/DD who undergo surgery need to arrange services for their unsupervised patient while hospitalized and during recovery. Caregiving is a physically and psychologically demanding responsibility that may slow the recuperation of the patient who is also a caregiver to a patient with MR/DD.

4. Medical-legal Issues

Families can be apprised of the special risks to post-operative care present in those with MR/DD. A careful discussion of potential risks as well as anticipated interventions will send a reassuring message to the family that all possible efforts have been used to assure a positive outcome. When serious or life-threatening post-operative complications occur, the family is reassured that all efforts were made to appropriately manage the person with MR. This constitutes excellent healthcare and solid, medico-legal practice.

Surgical teams and hospitals that fail to accommodate persons with MR accept additional medical-legal risks. The post-operative delirious patient may not regain previous cognitive function and family may assume that the “new onset” loss was the product of poor surgical or anesthetic care

rather than an expected potential complication of surgery and delirium. Failure to document pre-operative cognitive loss produces medical-legal responsibility for post-operative recognition by family or other individuals.

Table 1
Common Dosing Ranges of Injectable Medications for Acute Agitation in the Adult MR/DD Patient Produced by Delirium
 (Dosing Range in Milligrams)

MEDICATION	FRAIL or OLD (mg)	HEALTHY (mg)	CAUTION See PDR
Haldol (haloperidol) ¹	0.5 to 2.5	1 to 5	Acute EPS
Zyprexa (olanzapine) ²	2.5 to 5	2.5 to 10	Hypotension
<p>¹ May give Haldol every two hours for a total of four doses in 24 hours. ² May give a total of three doses of Zyprexa per 24 hours. Second dose may follow first dose by 2 hours and the third dose may be administered four hours after the second.</p> <p>These values are suggested guidance. Each patient should be individually assessed and dosing adjusted to that individual's clinical circumstances. Consult a child psychiatrist for treatment of children and adolescents. See PDR for complete information.</p>			

Table 2
Summary of Common Doses of Antipsychotic Medications Prescribed for the MR/DD Adult Population with Acute Agitation Produced by Delirium

Drug	Healthy/Adult Daily Dose	Frail or Elderly Daily Dose	Major Advisory
1st Generation Medications			
Haloperidol	1.0-10mg	0.5-5.0mg	High Potential for EPS/TD
2nd Generation Medications			
Risperidone	1-6mg	0.25-2.0mg	Dose-related EPS
Olanzapine	5-20mg	2.5-10mg	Sedation and Metabolic Issues
Quetiapine	25-400mg	25-200mg	Sedation and Hypotension Possible
3rd Generation Medications			
Aripiprazole	5-30mg	5-20mg	Akathesia and/or withdrawal Dyskinesia Possible
<p>ABBREVIATIONS: EPS – Extrapyramidal Symptoms TD- Tardive Dyskinesia Dosing for delirium should begin at lowest possible dose. Antipsychotic medications may produce sedation that is additive with other sedating medications. These values summarize typical dose ranges used for persons with MR/DD. Each patient should be carefully assessed and dosing adjusted to his or her clinical circumstances. See the PDR for a complete description of possible side effects.</p>			

SURGICAL FACT SHEET ON DELIRIUM

1. Delirium is a potential problem in all hospitalized persons with mental retardation.
2. Delirium is usually unrecognized in the emergency room.
3. Delirium increases one-month mortality and six months disability in older patients.
4. Patients with MR are at high risk for delirium.
5. Staff should understand the patient's sensory or communication problems prior to surgery.
6. Patients with severe MR may develop new behavioral problems from delirium.
7. Surgeons can minimize risks of delirium for MR patients by careful use of sedatives and coordination with the nursing service and review of current medications.
8. Patients with mild MR may become severely impaired in the post-operative period.
9. Surgeons and hospitals become responsible for post-operative delirium following surgery when the delirium is unrecognized prior to surgery.
10. Careful medical and nursing care for patients with MR in the post-operative period may substantially improve outcome and increase family satisfaction.

REFERENCES

1. American Psychiatric Association. Practice guideline for the treatment of patients with delirium. **Am J Psychiatry** 156:5, May 1999 suppl.
2. Lewis LM, Miller DK, Morley JE, Nork MJ, Lasater LC. Unrecognized delirium in ED Geriatric Patients. **American Journal of Emergency Medicine**, March 1995;13(2):142-145.
3. Curyto KJ, Johnson J, TenHave T, et al. Survival of hospitalized elderly patients with delirium. **Am J Geriatr Psychiatry** 2001;9:141-147.
4. Beers MH, Ouslander JG, Rollinger I, Reuben DB, et al. Explicit criteria for determining inappropriate medication use in nursing home residents. **Arch Intern Med** 1991;151:1825-1832.
5. Stuck AE, Beers MH, Steiner A, Aronow HU, et al. Inappropriate medication use in community-residing older persons. **Arch Intern Med** 1994;154:2195-2200.
6. Kalachnik JE, Hanzel TE, Harder SR, et al. Antiepileptic drug behavioral side effects in individuals with mental retardation and the use of behavioral measurement techniques. **Mental Retardation** 1995;33(6):374-382.
7. Kastner T, Walsh KK, Fraser M. Undiagnosed medical conditions and medication side effects presenting as behavioral/psychiatric problems in people with mental retardation. **Mental Health Aspects of Developmental Disabilities**, July/August/September 2001;4(3):101-107.
8. Ryan R, Sunada K. Medical evaluation of persons with mental retardation referred for psychiatric assessment. **General Hospital Psychiatry** 1997;19:274-280.
9. Inouye SK, Charpentier PA. Precipitating factors for delirium in hospitalized elderly persons. **JAMA** 1996;275:852-857.
10. Edlund A, Lundstrom M, Brannstrom B, et al. Delirium before and after operation for femoral neck fracture. **J Am Geriatr Soc** 2001;49:1335-1340.
11. Espino DV, Jules-Bradley ACA, Johnston CL, Mouton CP. Diagnostic approach to the confused elderly patient. **American Family Physician** 1998;57(6):1358-1366.
12. Samuels SC, Evers MM. Pragmatic guidance for managing a common, confounding, and sometimes lethal condition. **Geriatrics**, June 2002;57(6):33-38.
13. Sandberg O, Gustafson Y, Brannstrom B, Bucht G. Clinical profile of delirium in older patients. **J Am Geriatr Soc** 47:1300-1306, 1999.
14. Chyka PA. How many deaths occur annually from adverse drug reactions in the United States? **Am J Med** 2000;109:122-130.
15. Gurwitz JH, Field TS, Avorn J, McCormick D, et al. Incidence and preventability of adverse drug events in nursing homes. **Am J Med** 2000;109:87-94.
16. Johnson JA, Bootman JL. Drug-related morbidity and mortality. **Arch Intern Med**. 1995;155:1949-1956.
17. Kay GG, Berman B, Mockoviak SH, et al. Initial and steady-state effects of diphenhydramine and loratadine on sedation, cognition, mood and psychomotor performance. **Arch Intern Med** 1997;157:2350-2356.
18. Budd S, Brown W. Effect of a reorientation technique on postcardiotomy delirium. **Nursing Research** 1974;23(4):341-3348.

19. Chatham MA. The effect of family involvement on patients' manifestations of postcardiotomy psychosis. **Heart and Lung** 1978;7(6):995-999.
20. Owens JL, Hutelmyer CM. The effect of preoperative intervention on delirium in cardiac surgical patients. **Nursing Research** 1982;31(1):60-62.
21. Parellada E, Baeza I, de Pablo J, Martinez G. Risperidone in the treatment of patients with delirium. **J Clin Psychiatry** 2004;65:348-353.
22. Sasaki Y, Matsuyama T, Inoue S, et al. A prospective, open-label, flexible-dose study of quetiapine in the treatment of delirium. **J Clin Psychiatry** 2003;64:1316-1321.