

Advances in the Biology of Serious Mental Illness: Legal Implications

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Case Study (1)

- H. S., a 27 yr. old, unmarried, Hawaiian-Chinese-Portuguese male
- transferred from Maui for his 1st HSH admission
- Legal Status: 406 (Assault in the 3rd degree)
- Diagnosis: Schizophrenia, Paranoid Type
- 5 year history of medication refusal and homelessness
- Refused medication on admission

Objectives

1. Review Advances in Understanding of the Biology of Schizophrenia
2. Review How the Biological Effects of Schizophrenia Affect Capacity to Make Informed Treatment Decisions
3. Review Advances in Understanding of Medication Treatment of Schizophrenia
4. Review Studies on Assisted Treatment and Judicial Review
5. Discuss Legal Implications

Schizophrenia: Definition

- Schizophrenia is a disease of the brain.
- People with schizophrenia comprise more than 1% of the world's population across all cultures.
- Profoundly socially isolating and economically debilitating condition.
- Usually begins during late adolescence through mid-adulthood.

The Characteristics of Schizophrenia involve a Range of Cognitive and Emotional Dysfunctions

- perception,
- inferential thinking,
- language and communication,
- behavioral monitoring,
- affect,
- fluency and productivity of thought and speech,
- hedonic capacity ,
- volition
- drive
- attention.

History of Schizophrenia

- Egypt in the second millennium BC. Many of the clinical symptoms of schizophrenia known today were described in detail in the Book of Hearts of the Eber papyrus.
- In 1878, Emil Kraepelin, a German Neuropsychiatrist described a disorder, that he called dementia praecox, or early dementia with four subtypes - simple, marked by slow social decline and withdrawal; paranoid, defined by persecutory delusions and fear; hebephrenic, marked by rambling and incoherent speech and incongruous affect; and catatonic, characterized by a severely limited movement and expression.

<http://www.loni.ucla.edu/Research/Projects/Schizophrenia.shtml>

History of Schizophrenia (2)

- In 1911, Eugen Bleuler first used the term 'schizophrenia'.
- Literally, schizophrenia, translates as "split mind".
- Although the term originated almost 100 years ago, it foreshadowed and describes recent neuro-biological findings.

Core Symptoms of Schizophrenia

- Positive symptoms: hallucinations, delusions and disorganized speech
- Negative symptoms: social withdrawal, apathy, absence of normal emotional feeling and expression
- Cognitive impairment

Cognitive Function

- Cognitive testing of people with schizophrenia, both generalized function such as, IQ testing, and specific tests, such as, processing speed decline at the onset of psychosis and during episodes of psychotic symptoms.
- The decline of cognitive functioning in people with schizophrenia predicts the loss of the ability to function in everyday life resulting in the high social costs.

Multiple Areas of Cognitive Functioning are Impaired in Schizophrenia

- speed of processing
- attention/vigilance
- working memory
- verbal learning
- visual learning
- reasoning
- problem solving
- social cognition

Green 2006

Severe Mental Illness: A Major Public Health Issue

- Schizophrenia ranks ninth in global burden of illness, Bipolar disorder ranks sixth.
- Mortality is considerable: the projected lifespan for individuals with schizophrenia is 15 years less than the general population.
- The personal, familial, and societal costs of both bipolar disorder and schizophrenia are enormous.

Sullivan, 2005; Dardennes et al., 2006

Schizophrenia Costs (USA, 2002)

Total = \$62.7 billion

Direct health care cost = \$22.7 billion

\$7.0 billion outpatient,

- \$5.0 billion drugs,
- \$2.8 billion inpatient,
- \$8.0 billion long-term care.

Loss of Productivity = \$32.4 billion.

- Bipolar disorder has a similar total cost and pattern of costs
- Each disorder accounts for about 2% of US national health care costs per year.

Severity of Functional Deficits Among Patients with Schizophrenia

- Only 10% of patients with schizophrenia work full time, and only one third has ever worked even part time
- 50% receive disability within 6 months of diagnosis
- Fully independent living occurs in less than 10% of patients with schizophrenia

Mueser et al., 2001; Ho et al., 1997; Harvey, 2004

Neurobiology of Schizophrenia: A Current Model

- Schizophrenia is the result of three distinct interactive biological processes:
- Disturbance in early (prenatal and perinatal) neuro development
- Disturbance in late (post-pubertal) neuro development
- Active progressive process that starts at the transition to the symptomatic stage

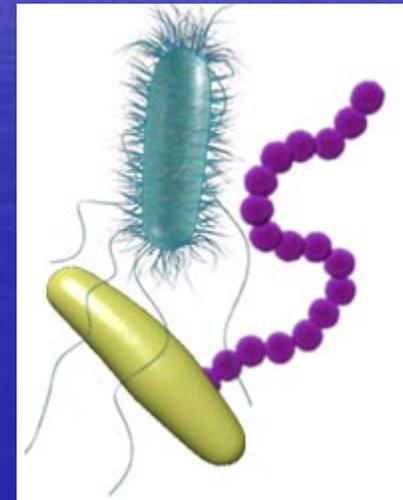
Pantelis et al, 2005

Genetics of Schizophrenia

- Schizophrenia is a complex trait genetic disorder (family history is strongest risk factor responsible for 80% of effects)
- Other biological risk factors are environmental (responsible for 20% of effects) include:
 - complications during pregnancy and delivery
 - infections during pregnancy
 - disturbances of early neuro-motor and cognitive development
 - heavy cannabis use in adolescence

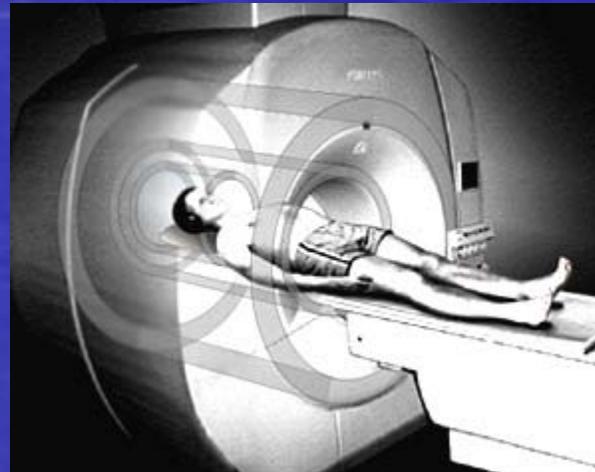
Sullivan et al., 2003; Maki et al., 2005; Pantelis et al, 2005

Advances in Medical Knowledge Usually are a Result of Technological Advances



Volumetric MRI and Diffusion Tensor Tractography: Understanding the Biology of the Symptomatic Stage of Schizophrenia

Thompson et al., 2004



Volumetric MRI Allows Quantitative
Examination of Specific Brain Areas
Diffusion Tensor MRI Allows
Evaluation of White Matter Tracts



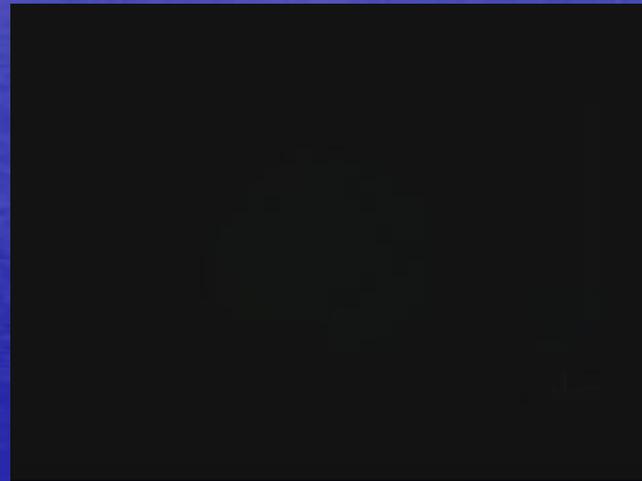
Grey Matter: Volumetric Studies

- There are over 10 controlled studies in the past four years documenting grey matter loss among patients with schizophrenia.
- MRI studies of children with schizophrenia demonstrate 1% to 5% loss of gray matter per year compared to no loss in healthy controls
- Loss occurs in the temporal, frontal and parietal lobes
- This process is 20 to 30 years earlier in development than among healthy controls

Keller et al., 2003; Mathalon et al., 2001;
Niznikiewicz et al., 2003;
Panttelis et al., 2003; Thompson et al., 2004

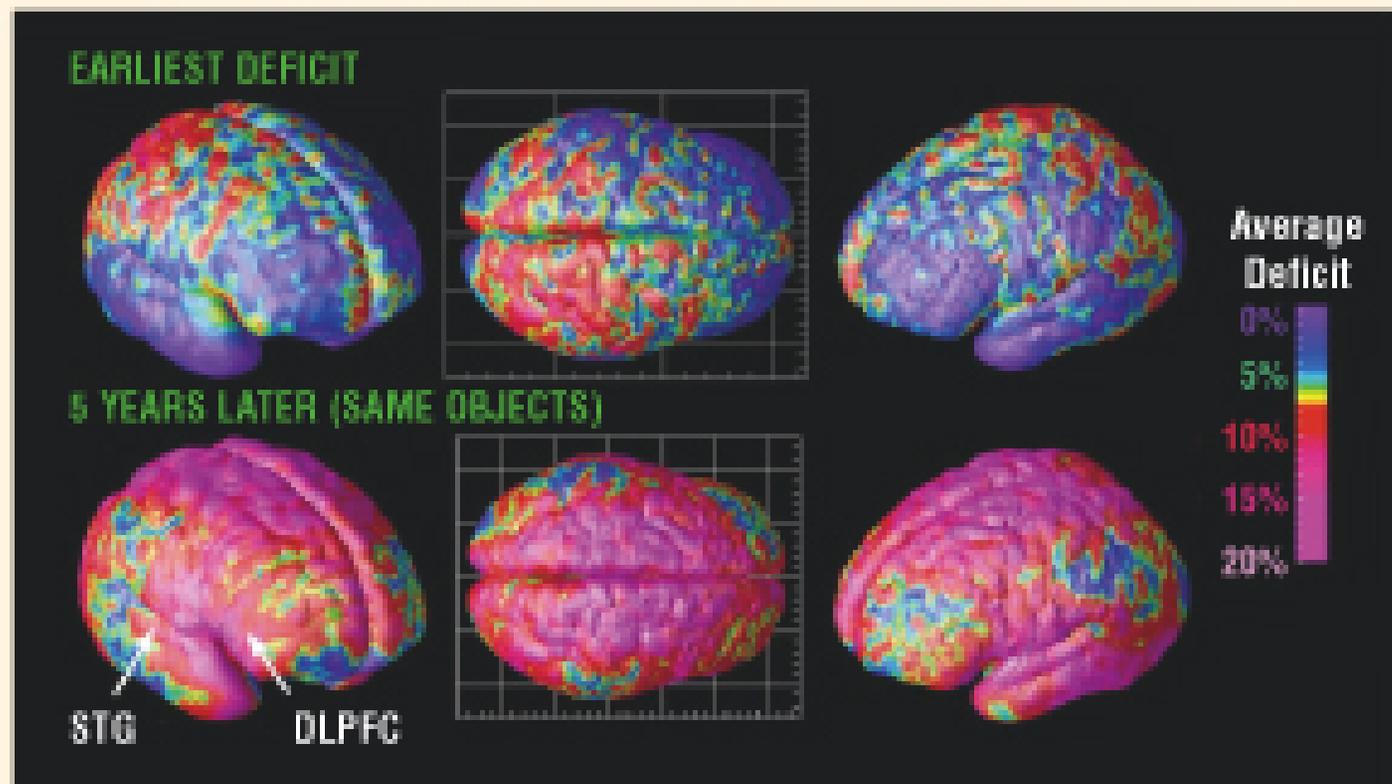
Visualization of Brain Cell Loss in Patients with Schizophrenia

- Composite depiction of multiple MRI scans over time
- Courtesy, Dr. Arthur W. Toga, Laboratory of Neuro Imaging at UCLA



Figure

Early and Late Gray Matter in Schizophrenia



Source: Thompson PM, Vidal C, Glidd JN (2001), Mapping adolescent brain change reveals dynamic size of accelerated gray matter loss in very early-onset schizophrenia. *Proc Natl Acad Sci U S A* 98(20):11650-11655. Copyright 2001 National Academy of Sciences, U.S.A. Reprinted with permission.

Clinical Implications of Grey Matter Volumetric Studies

- Multiple studies document the association between grey matter loss and impaired cognition and executive functioning among patients with schizophrenia.

Bilder et al., 1995; Szeszko et al., 2000,
Ho et al., 2003; Velakoulis et al, 2002

- Studies also document the association of grey matter loss and impaired clinical outcomes.

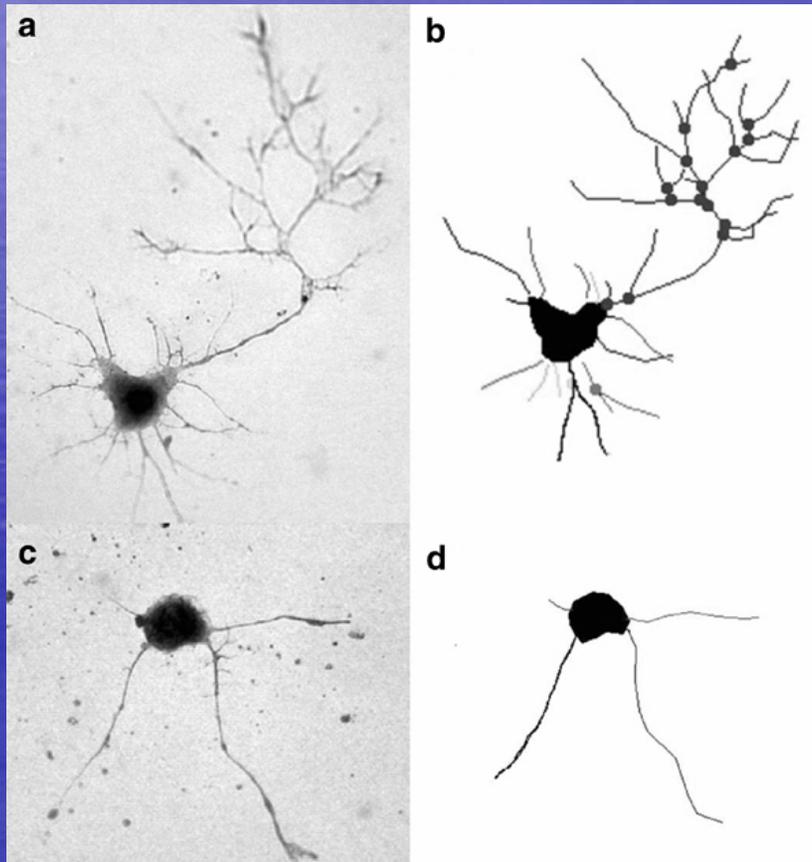
Ho et al, 2003

Autopsy Studies Provide Corollary Evidence

- Microscopic examination of brain tissue from patients with schizophrenia find evidence for:
- Alterations in synaptic connectivity
- Reduced dendrite length
- Reduction in glial cell numbers

Black et al., 2004; Garey et al., 1998; Rajkowska et al., 2002;
Rajkowska et al., 1998; Selemon and Goldman-Rakic, 1999;
Senitz and Winkelmann, 1991; Stark et al., 2004

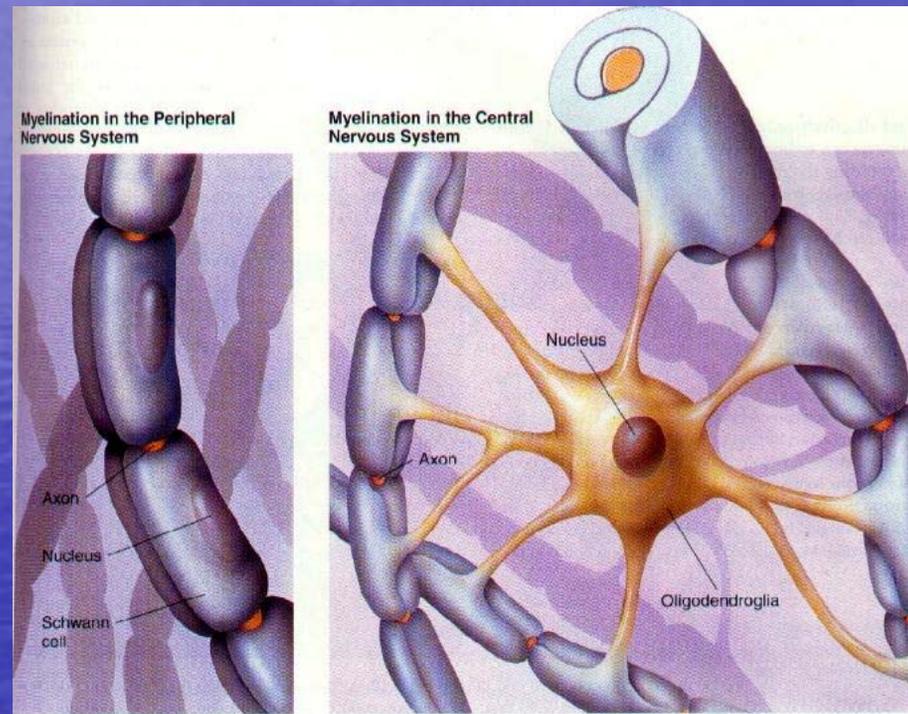
Examples of Normal Neurons and Neurons from Patients with Schizophrenia



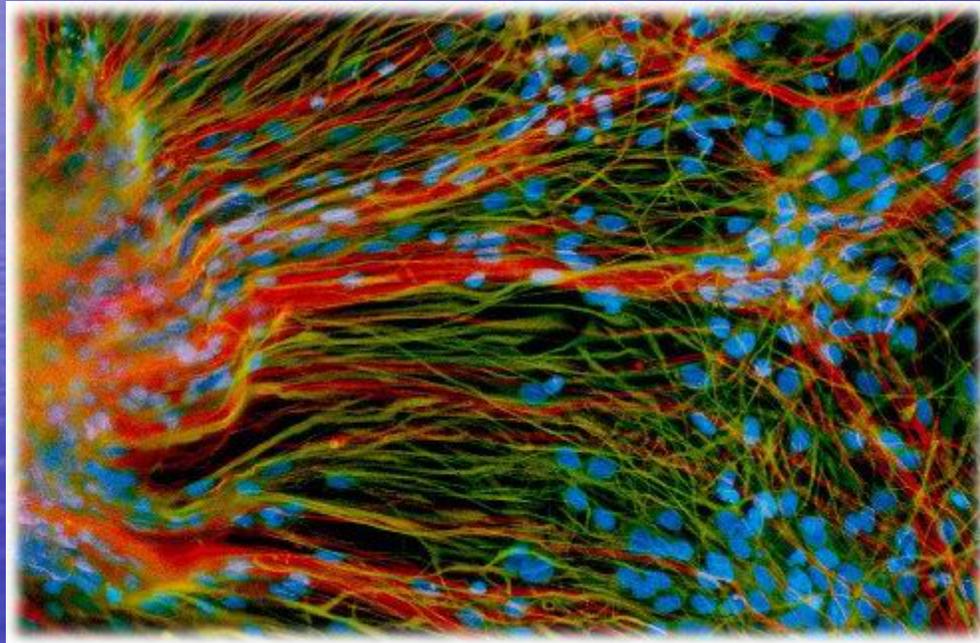
Grey Matter Changes: Summary

- Schizophrenia is associated with a progressive process that starts at the transition to the symptomatic stage.
- Over 10 studies document the loss of grey matter, predominantly glial cells and synaptic connections in the frontal, temporal and parietal lobes.
- Multiple studies associate the loss of grey matter and decline in cognitive and executive functioning and impaired functioning.

Glial Cells Support Neurons and their connections (1)



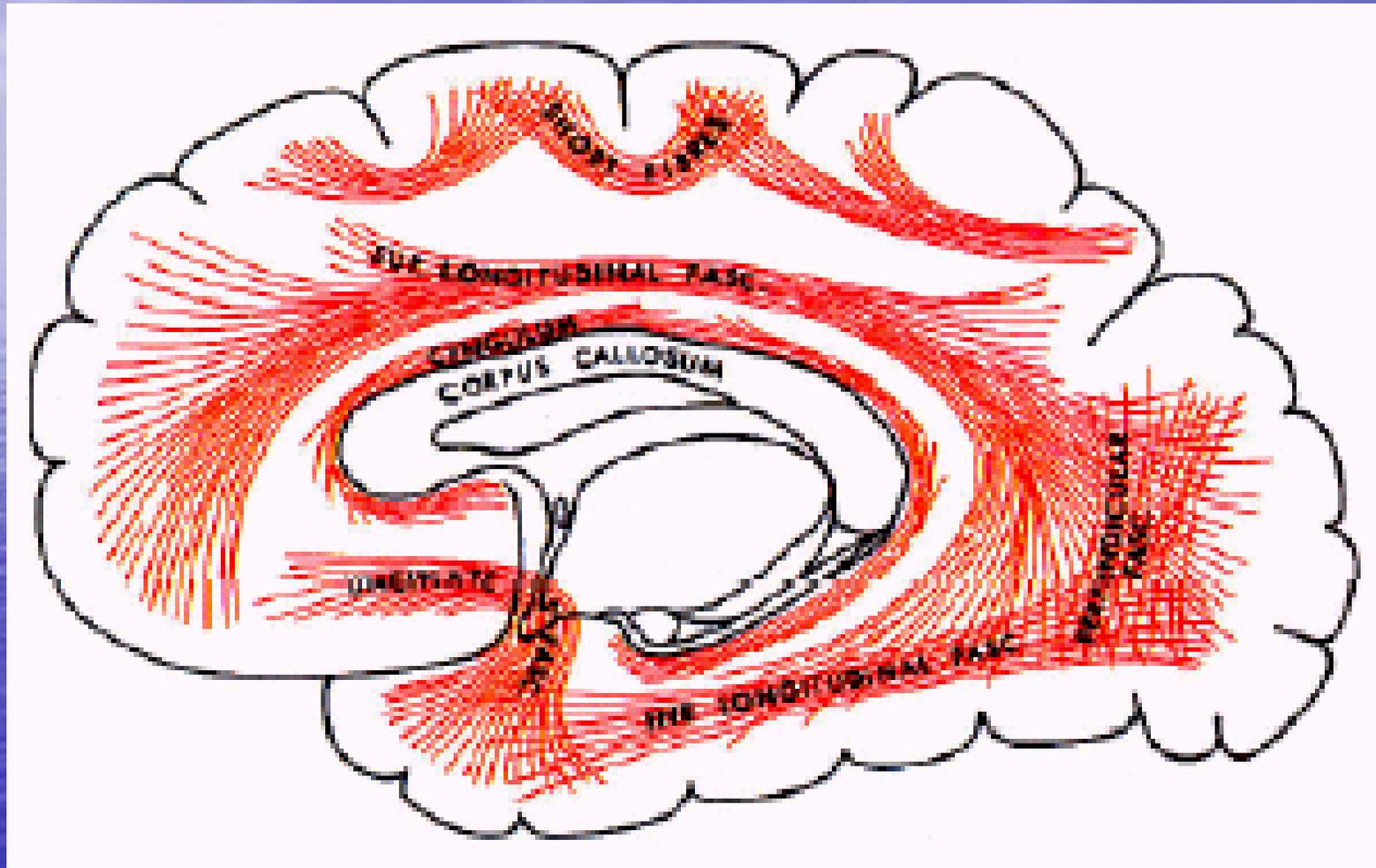
Glial Cells Support Neurons and their connections (2)



White Matter



White Matter is Composed of Tracts



White Matter MRI Studies

- As of 2006, over 30 studies of white matter among patients with schizophrenia using diffusion tensor MRI techniques and 16 studies using other MRI techniques.
- Patients with chronic schizophrenia have widespread deficits in cortical white matter integrity that interfere with generalized information processing.

Lim et al., 1999; Walterfang et al., 2005; Kubicki et al., 2005;
Rose et al., 2006; Walterfang et al., 2006

White Matter Volume Changes Associated with Symptom Severity

- White matter volume increases with increased symptoms
- White matter volume decreases with remission
- These findings suggest swelling of white matter increases dysfunction and psychotic symptoms.

Christensen et al., 2004

White Matter Abnormality Associated with Functional Abnormality

- Combined diffusion tensor MRI and fMRI study found abnormal brain activation in areas with loss of white matter integrity among patients with schizophrenia

Schlosser et al, 2007

The Loss of Glial Cells Causes Abnormal Connections in the Brain, Literally, A Split Mind.

- Patients with Schizophrenia Have Abnormal Connections Among Individual Neurons

Black et al., 2004

- Patients with Schizophrenia Have Abnormal Connections Among the Different Functional Areas of the Brain, Especially the Frontal Cortex and other Lobes

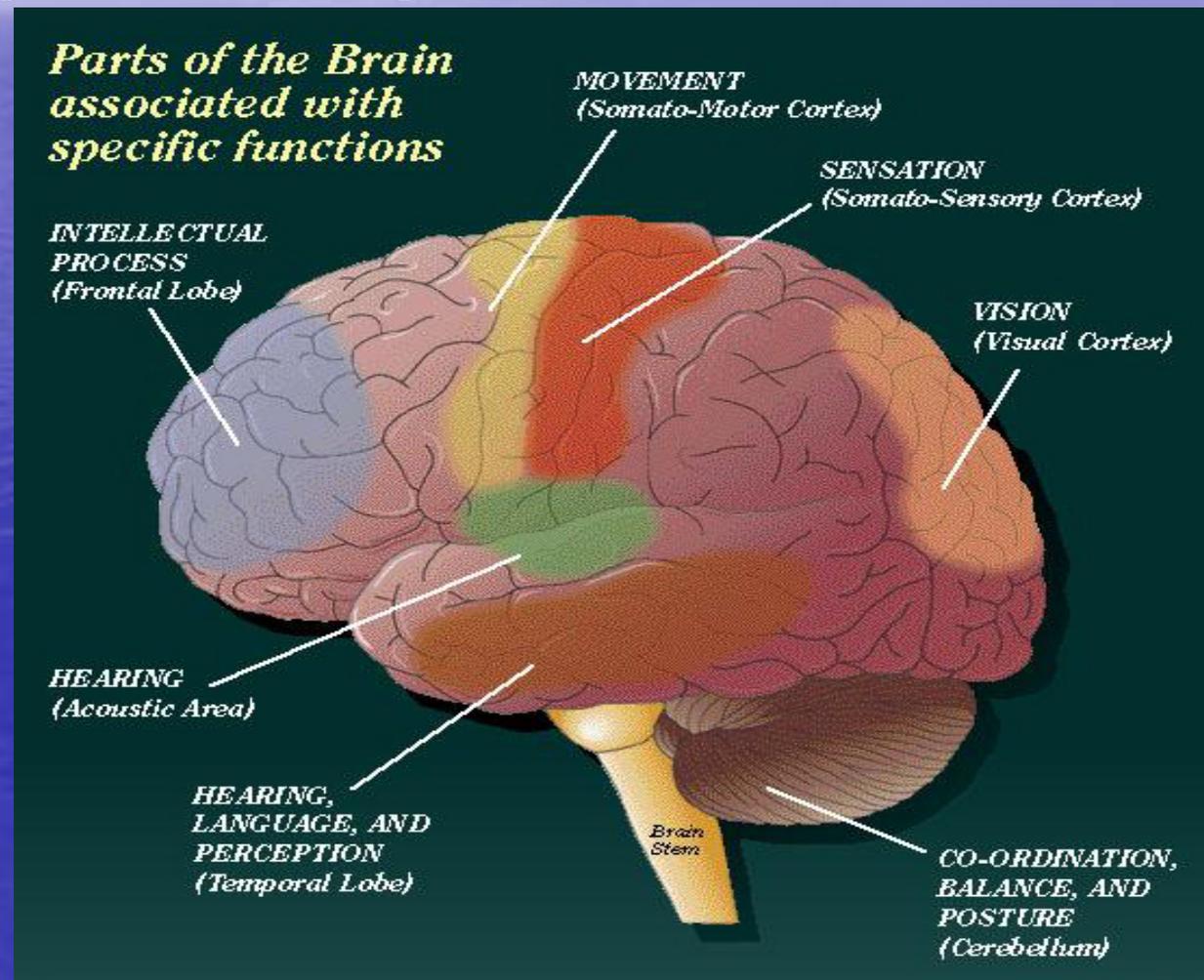
Rose et al., 2006; Walterfang et al., 2006

Disconnections among the Brain's Lobes may explain psychotic symptoms

Frontal &
Parietal =
Catatonia

Frontal &
Temporal =
Thought
Disorder

Frontal &
Limbic = Affect
Incongruence



White Matter Study of Auditory Hallucinations

- During inner speech, the alterations of white matter fiber tracts in patients with frequent hallucinations lead to abnormal co-activation in regions related to the acoustical processing of external stimuli.
- Abnormal activation may account for the patients' inability to distinguish self-generated thoughts from external stimulation.

Hubl et al., 2004

What are the implications of the changes in grey and white matter that occur during the symptomatic stage of schizophrenia for treatment?

Schizophrenia: Course

- Over time, many people with schizophrenia tend to have episodes of more intense symptoms and experience a decline in functioning, i.e., a progressive course.
- For many patients with schizophrenia, the symptoms and functional level eventually plateau.
- The decline in functioning directly results in the high social costs (loss of productivity and long term care costs).

Wu et al., 2005; McGlashan, 2006

Is Active Psychosis Toxic? (1)

- Wyatt (1991) reviewed 22 studies and found that treatment with first generation antipsychotics improved the course of the illness.
- Wyatt also cited earlier treatment studies of ECT that decreased the proportion of patients with severe forms of schizophrenia.

Is Active Psychosis Toxic? (2)

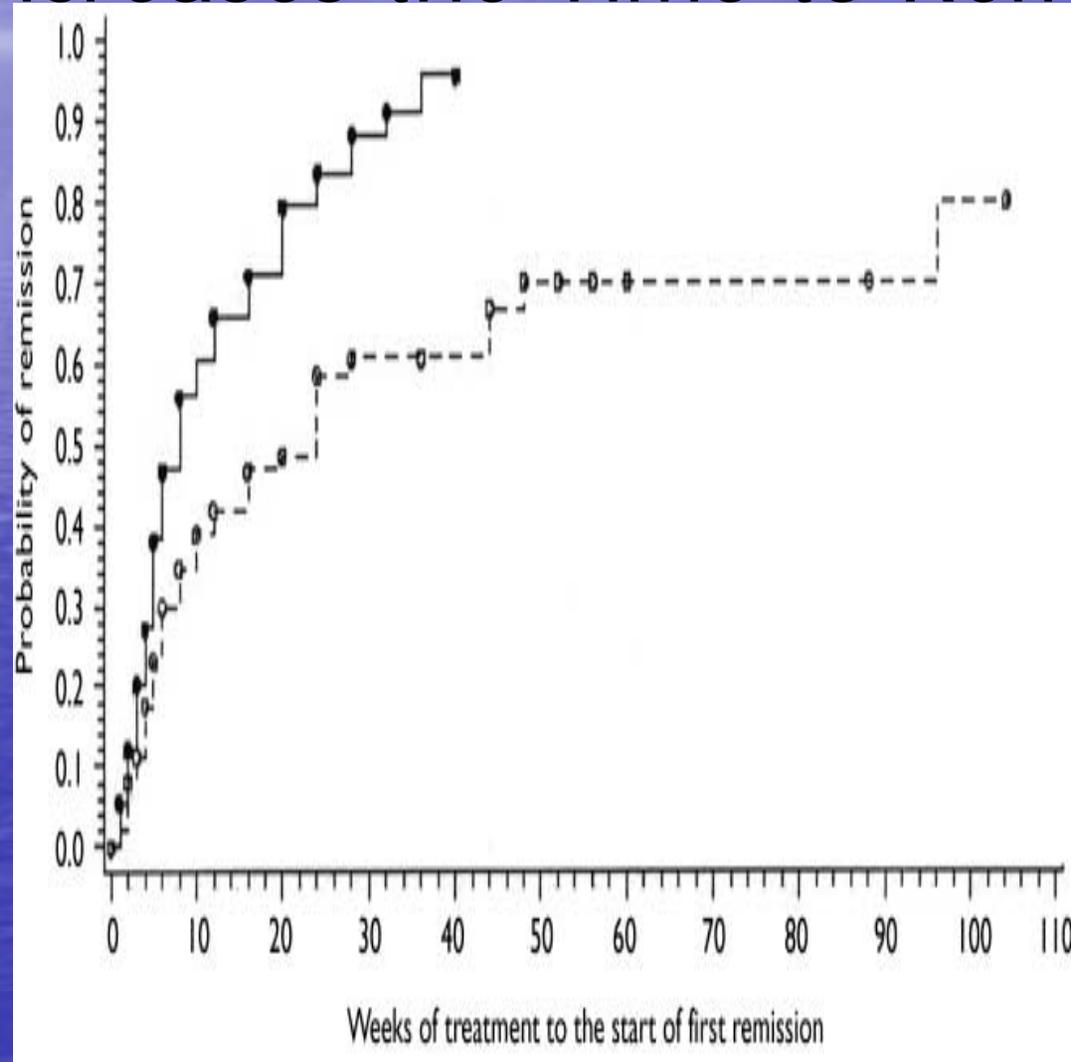
- McGlashan (2006) reviewed the schizophrenia course literature and found a pattern of early deterioration and a later plateau.
- McGlashan also estimated that the deterioration was most active in the first 3 years and lasted from 5 to 10 years post onset of psychotic symptoms.

Is Active Psychosis Toxic? (3)

- Multiple studies have found that a longer duration of untreated psychosis is associated with poor outcomes.

Haas et al., 1998; Amminger et al., 2002;
Gunduz-Bruce et al., 2005; Perkins et al., 2004;
Perkins et al., 2005

Delaying Medication Treatment Decreases the Response to Treatment and Increases the Time to Remission



Longer Duration of Untreated Psychosis is Associated with A Broad Range of Poor Outcomes

- Symptom increase including
- Severity of global psychopathology,
- Positive symptoms, especially Delusions,
- Negative symptoms,
- Impaired cognition and
- Worse functional outcomes

Haas et al., 1998; Amminger et al., 2002;
Gunduz-Bruce et al., 2005; Perkins et al., 2004;
Perkins et al., 2005

Summary

- Symptomatic reduction with somatic therapies may affect long term course.
- The longer the time a patient experiences psychotic symptoms, the less likely they are to respond to treatment and retain their ability to function.

Treatment Implications

- Early Intervention Studies
- Public Health Educational Campaigns
- Compliance Therapies
- Do somatic therapies differentially affect the biological processes associated with schizophrenia?

Studies of Antipsychotic Medications

- Almost all studies of medication have focused on symptom reduction.
- Few studies have attempted to gauge the effects of medications on the underlying biological processes of schizophrenia.

Two Generations of Antipsychotic Medication

- First generation of antipsychotic medication (Thorazine, Haldol) developed from the 50's through the 80's, prominent neuro-muscular side effects including Tardive Dyskinesia
- Second generation (olanzapine) developed in the 90's, less neuro-muscular side effects, more tolerable, wider range of pharmacological effects

Differential Treatment Effects

- Meta analytic evidence review shows that second generation antipsychotic medications improve cognition among schizophrenic patients to a greater extent than first generation antipsychotics.

Harvey and Keefe, 2001

- Several studies found that second generation antipsychotic medications may have a protective effect for gray matter loss while first generation antipsychotics do not. Garver et al., 2005; Keefe et al., 2005; Lieberman et al., 2005

Differential Treatment Effects (2)

- Mice brain cell cultures show differential effects of first and second generation medication on proteins associated with synapse formation Critchlow et al., 2006
- Administration of haloperidol to Rhesus monkeys found inhibition of proteins associated with synapse formation Lidlow et al., 2001
- No published studies on differential effects on white matter.

Similar Findings for Affective Disorders

- Preliminary evidence supports both localized cell loss and white matter disruption with major depression and bipolar disorder.
- Preliminary evidence supports a progressive course for affective disorders.
- Preliminary evidence supports neuro-protection with ECT, mood stabilizers, antidepressants and lithium among patients with affective disorders

Medication Issues

- 50% of patients with schizophrenia have episodes of medication non compliance, even during the first episode. Hui et al., 2006; McIntosh et al., 2006
- Especially complex situations occur when patients who are involuntarily hospitalized refuse medication

Competency

- An adult is considered competent unless judicially determined to be incompetent or is incapacitated by a medical emergency.
- "No single test of competency"
- Competent people have the right to refuse treatment

Simon and Sadoff, 1994

- Involuntarily hospitalized psychiatric patients are legally considered competent

Four Standards of Competency

- Understanding of information provided
- Rational decision making.
- Appreciation of treatment options and
- Communication of choice

Simon and Sadoff, 1994

- Review the empiric evidence of these abilities among patients with schizophrenia
- Minimal evidence except for appreciation of one's options

Understanding of Information Provided

- Few patients with schizophrenia who are actively psychotic are able to demonstrate the objective knowledge that forms the basis of informed consent about medication treatment, even after a thorough informed consent explanation.

Irwin et al., 1985

Rational Decision Making

- All cases of treatment over objection in New York (68) from 1986 through 1990, no patient gave only rational reasons for medication refusal.

Ladds et al., 1993

- In a study of a locked psychiatric unit in California, only 1% of the patients that required hearings for treatment refusal were found to be competent.

Binder and McNiel, 1991

Appreciation of Treatments Options

- Insight is necessary to appreciate and understand a person's treatment options.
- Insight among patients with schizophrenia is highly correlated with the capacity to consent to treatment.

Melamed et al., 1997

- Insight is a multi-dimensional concept

Sevy et al., 2004

Insight: Multi-Dimensional

- Awareness of the presence of an illness
- Awareness of social consequences of the illness
- Awareness of the need for treatment
- Awareness of the presence of symptoms
- Awareness of the connection between symptoms and the illness

Sevy et al., 2004

Impaired Insight

- Multiple studies, some cross cultural and multi-national found 50 to 90% of patients with schizophrenia do not believe that they are ill.
- 40% were unaware of the social effects of their illness.
- 60% were unaware of their symptoms.
Gharabawi et al., 2006; Sevy et al., 2004
- The severity of schizophrenic symptoms is highly correlated to the lack of awareness that the patient is ill.

Sevy et al., 2004

Insight and Cognitive Deficits

- Lack of insight about need for medication is highly correlated to the degree of cognitive impairment among patients with schizophrenia.

Sevy et al., 2004

Multiple studies document the association between grey matter loss and impaired cognition and executive functioning among patients with schizophrenia.

Bilder et al., 1995; Szeszko et al., 2000,
Ho et al., 2003; Velakoulis et al, 2002

Insight and Frontal Lobe Function

- Review of 34 English language studies
- Found correlation between insight deficits and impaired performance on the Wisconsin Card Sorting Test among patients with schizophrenia
- Impaired insight mediated by deficiencies in conceptual organization and flexibility in abstract thinking
- Association found with Anosognosia

Shad et al., 2006

Anosognosia: A Neurological Condition

- Severe lack of awareness of their illness
- The belief persists despite conflicting evidence
- Patients discount conflicting evidence about their disability
- Compulsion to prove their belief that the disability does not exist
- Associated with Frontal Lobe Dysfunction
- Often found in Traumatic Brain Injuries and Strokes

Amador and Paul-Oudouard, 2000; Flashman et al., 1998

Insight and Frontal Lobe Volume

- Two studies of patients with first episode schizophrenia found reduced dorsolateral prefrontal cortex (DLPFC) volumes and errors on the Wisconsin Card Sorting Test correlated with impaired insight.
- The studies suggest that deficits in self monitoring by DLPFC mediate impaired insight.

Shad et al., 2004; Shad, Muddasani, Keshavan, 2006

Schizophrenia and Competence

- Schizophrenia and its associated biological processes profoundly affect multiple components of the patient's ability to make competent treatment decisions.
- There is abundant evidence that the appreciation of treatment options is profoundly affected among the majority patients with schizophrenia.
- There is empirical evidence that the abilities of understanding information and rational decision making are also affected.

Assisted Psychiatric Treatment

- When a psychiatric patient is incompetent to make treatment decisions, treatment may be assisted by the legal system.
- The systems to decide competence and order treatment vary by state and can be driven by rights or treatment models.
- Depending on the jurisdiction, once a patient is found incompetent, the judge can determine the treatment or a guardian can be appointed.

Wortzel, 2006

Assisted Treatment: Who needs it?

- Between 2% and 18% of hospitalized psychiatric patients require assisted treatment
- Usually people with diagnoses of schizophrenia and severe bipolar disorder.

Stienhart and Kaallert, 2006

Who decides whether the patient is incompetent and assisted treatment is appropriate?

- Judicial review (examples: Hawaii, Massachusetts, New York)
- Clinical administrative review (examples: Louisiana, New Jersey, Virginia)
Greenberg and Attia, 1993; Urrutia, 1994;
Kasper et al., 1997
- Riese hearings, facilitated judicial reviews usually occurring within 72 hours (example: California)

Binder and McNeil, 1991

Criteria for Assisted Treatment

- Danger to self and others is an almost universal criteria for assisted treatment based on a 1983 case Rennie v Klein
- Threat to the ability to function is a criteria in 20 states

Twenty States have Deterioration as a criterion for Assisted Treatment

- "Without treatment will continue to suffer mental distress and deterioration of the ability to function independently and the respondent is unable to make a rational and informed decision concerning treatment." Alabama
- AL, AK, AZ, AR, IN, ME, MN, MS, MT, NH, NY, ND, OK, TX, UT, VT, WA, WV, WI, WY

<http://www.psychlaws.org/LegalResources/statechart.htm>

Assisted Treatment: Results

- In a study of a locked psychiatric unit in California, only 1% of the patients that required hearings were found to be competent to refuse medications

Binder and McNiel, 1991

- In a study of all cases of treatment over objection in New York (68) from 1986 through 1990, Judges never found that someone who is "incompetent to stand trial" is "competent" to refuse medication.

Ladds et al., 1993

Assisted Treatment: Results (2)

- A Canadian study of 334 judicial reviews during a ten year period (Ontario) found only 1.5% of cases found to be competent
Kelly et al., 2002
- A study of 1434 Massachusetts inpatients found all (258 or 18%) that required judicial review incompetent and ordered treatment. Hoge et al, 1990

Assisted Treatment: Response to Treatment?

- 93% of patients who had assisted treatment had a good clinical response
- 87 percent of patients who had assisted treatment were restored to "competency to stand trial."

Ladds et al., 1993

- A New Jersey study found "almost all" of the patients who had assisted treatment improved with treatment and were discharged

Greenberg and Attia, 1993

Assisted Treatment: Patient Attitudes after Treatment

- In a survey of 65 psychiatric inpatients who had assisted treatment in New Jersey after discharge from the hospital
- 60 percent agreed that assisted treatment was beneficial.
- 53 percent stated that they were more likely to take medication voluntarily in the future.

Greenberg et al., 1996

- A New York study of 24 patients who had assisted treatment found at discharge 71% agreed that the assisted treatment was beneficial

Schwartz et al., 1988

Assisted Treatment: Effects on Psychiatric Treatment

- Canadian study of 334 judicial reviews during a ten year period (Ontario)
- Delay in treatment ranged from 25 to 253 days
- Increased treatment cost of \$4000 per patient, not including cost of judicial review

Kelly et al., 2002

Assisted Treatment: Effects on Psychiatric Treatment (2)

- A two year study of all the judicial reviews in New York found decreased quality of care, increased patient decompensation, and increased staff injuries.

Cicccone et al., 1993

- Treatment delays for judicial reviews in US ranged from 24 to 135 days.

Kelly et al., 2002

Prospective Study: Judicial Review of Assisted Treatment (1)

- In a prospective study of 1434 Massachusetts inpatients
- 258 (18%) required judicial review of treatment refusal,
- Average refusal episode was 14 days
- Negative effects on the hospital milieu and for the patient including longer hospitalization and increased use of restraints and seclusion

Hoge et al, 1990

Prospective Study: Administrative Review of Assisted Treatment (2)

- In a prospective study of 348 Virginia inpatients
- 41 (11%) required review of treatment refusal
- All treatment refusals were ordered to treatment
- Treatment delays for administrative review averaged 3 days
- No difference in length of hospitalization for treatment refusals and controls.

Kasper et al., 1997

Summary: Effects on Treatment

- When treatment delays are relatively brief (3 days), there is minimal evidence for effects on treatment.
- When treatment delays are prolonged, there is evidence that psychiatric treatment is affected.
- Possible Mechanism: long duration of untreated psychosis is associated with a decreased response to treatment, an increased time to remission and a broad range of poor outcomes.

Discussion: Moral Aspects

- Gupta argues that detention of the mentally ill prior to assessment of decision making capacity is discrimination against the mentally ill.

Gupta, 2001

Discussion: Ethical Aspects

A person who has a mental disorder of a serious nature may be subjected, without his or her consent, to an intervention aimed at treating his or her mental disorder only where, without such treatment, serious harm is likely to result to his or her health.

Committee of Ministers of the Council of Europe
Convention on Human Rights and Biomedicine, 19
November 1996; Tannsjo, 2004



Assisted Treatment in Hawaii Based on Case Law

Case Law (1)

- *State of Hawaii v. Kotis*, 91 Hawai'i 319 (1999), Hawaii Supreme Court upheld order authorizing involuntary psychotropic medication for unfit defendant confined at HSH who was mentally ill and dangerous to self and others when medication treatment plan was medically appropriate and, in light of the inadequacy of less intrusive alternatives, essential to address defendant's dangerousness.

Case Law (2)

- *United States v. Sell*, 123 S.Ct. 2174 (2003), Government allowed to administer antipsychotic drugs to mentally ill defendant facing serious criminal charges to render defendant competent to stand trial but only if treatment is **medically appropriate, substantially unlikely to have side effects that may undermine fairness of trial, and taking into account less intrusive alternatives, is necessary to further important governmental trial-related interests**. Assuming defendant was not dangerous to self or others he could not be ordered involuntarily to take antipsychotic drugs solely to render him competent to stand trial without consideration of these important questions.

Case Study (2)

- The court granted an OTT for H. S. three weeks after admission
- After OTT was granted, involuntary medication was given by injection for several days
- H.S. took oral medication for the rest of his hospitalization
- Legal charges were resolved after 3 months of hospitalization
- He was discharged after 5 months of hospitalization to supported housing (Hale Imua) and currently has a part time job
- I will finish with a statement from him through a thank you card he sent to the unit.

Possible Solutions

- The American Psychiatric Association Council on Law and Psychiatry proposed 3 alternatives:
- At time of commitment, the court rules on the patient's competence
- A separate competence hearing scheduled after the initial commitment
- Administrative determinations of ability to refuse treatment second opinions and hearings within the hospital

Roth, 1985

Summary

1. Changes in the grey and white matter of the brain (glial cell death and loss of connectivity in the brain) is a part of the biology of schizophrenia.
 - The biological effects of schizophrenia cause impairment in the person's ability to think, reason, remember and process information in general.
 - The biological effects of schizophrenia cause malfunctioning in the frontal lobe (the brain's awareness center) and disrupts its connections with the rest of the brain causing symptoms and impairing insight about the illness.

Summary (2)

2. The majority of people with schizophrenia are not aware of their psychiatric symptoms or that they are mentally ill (Anosognosia).
 - The biology of schizophrenia severely compromises the person's ability to generally make decisions and specifically make decisions regarding their illness and its treatment.
 - The medical evidence demonstrates that the majority of people with schizophrenia lack the necessary capacity to make informed treatment decisions.

Summary (3)

3. The newer antipsychotic medications improve cognitive functioning and have a protective effect on the brain (at least in the short term), but can not restore brain cells that have died.
 - Timely administration of antipsychotic medications is critical to preserve functioning and retain response to treatment, especially in younger patients with schizophrenia, decreasing the huge social costs of the disorder.

Summary (4)

4. A small minority of patients require assisted treatment.
 - Assisted medication treatment of schizophrenia is successful among the majority of patients.
 - The majority of patients who have assisted treatment state that the treatment is beneficial at discharge.
 - Delay in treatment associated with lengthy legal proceedings is associated with more expensive treatment, staff injuries and patient decompensation.

Summary (5)

5. There are moral, ethical and public health interests supporting assisted treatment of patients with schizophrenia to prevent the harm to self and long term disability that occurs with prolonged periods of untreated psychotic symptoms.