

## **Team Assessment and Planning of Care: Vascular Dementia**

*Hassan. N. Ayyoub*

**Correspondence:**

*Dr Hassan. N. Ayyoub*

*MD, MPH&TM, MFamMed, BN, B CSER, PGCertTrarMed, GCertMenHlthPrac, GCPHCDC, FRSTMH, FRSPH, MATMS, ARACGP, MARONAH, MPHAA*

*The Wangee Clinic, 465 Punchbowl Rd Greenacre NSW 2190, Australia*

*Email: hayyoub2@hotmail.com*

### **ABSTRACT**

This study is meant to bring awareness to the members of the public around the globe about the dangers of dementia disease, importance of caring and team work to help the affected people in the locality. Types of dementia forms are clearly outlined but Vascular Dementia form is the basic form that is discussed in this study. The study includes a brief outline of the disease, its types, symptoms, causes, effects, diagnosis treatment and the affected people ratio in the globe. It also provides advice on the risk factors of affected individuals, to help deal with the disease. A case study on the disease, diagnosis and effects are provided to help understand the disease.

**Key words:** Vascular Dementia, Management, Care

### **1. Introduction**

#### **1.1 Dementia**

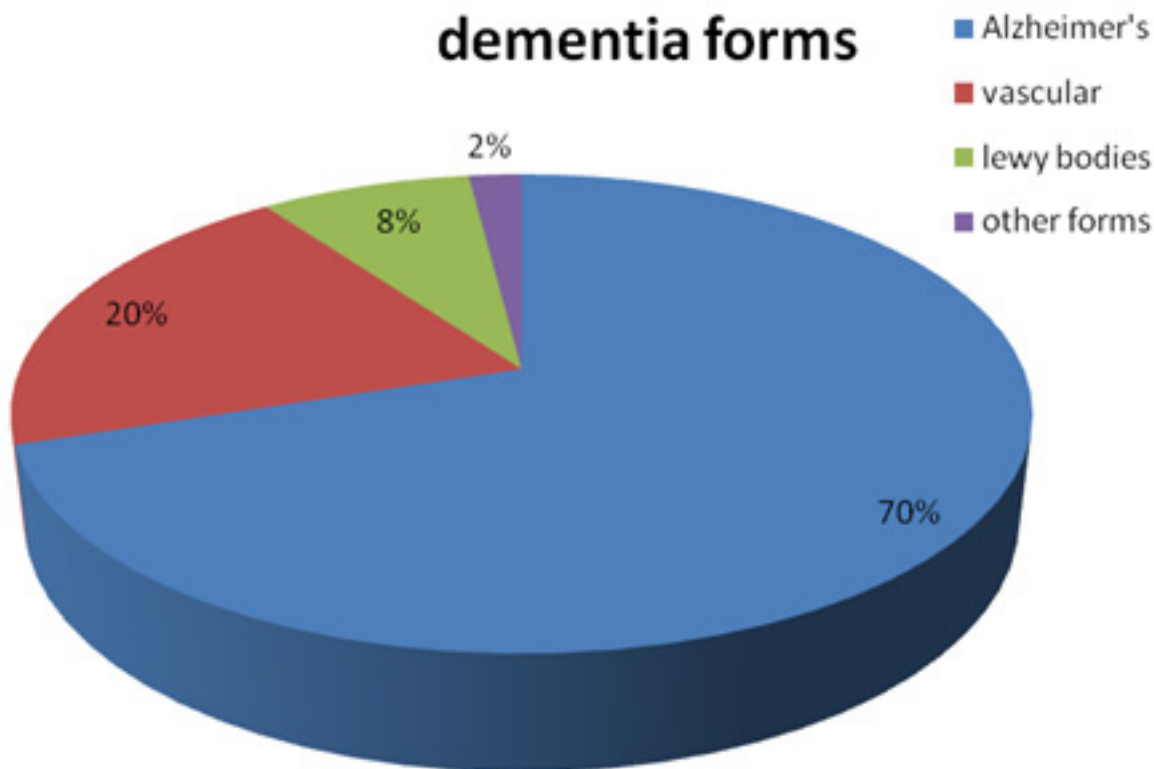
The term dementia refers to a set of symptoms that occur after the brain is damaged by a specific disease. This includes memory impairment, loss of communications skills and gradual deterioration in the person's ability to carry out daily tasks and activities(1). Frequent signs of ailment include troubles with verbal communication and enthusiasm. There are some small cases of the disease running in families. The view of ailment normally depends on the rigorousness and the history of individuals' health. It is anticipated that about 40 million populace of the planet are affected by the illness, that is, about 20% of the populace develop ailment at one point in their existence(1).

The disease is more common with age the group 66-75; 3% of this group are suffering from dementia. In the age group of 73-85, it is estimated that 19% of them have Dementia. It is also estimated that about half of the people aged 87 and above have Dementia. Dementia for this reason is the most common cause of disability among aged people in the world and it is suggested that it accumulates economic costs(2). Social stigma greatly impacts on affected people. Therefore, there is need to raise more awareness of the disease to avoid such impacts on patients and stigma.

#### **1.2 Forms of Dementia**

There are numerous forms of dementia. Some of the most prevalent forms are conferred in the following figure.

Figure 1: A pie chart to show the percentage spread of Dementia forms



### 1.3 Alzheimer's Disease

This is the most widespread form of Dementia. It affects about 80% of individuals in most Dementia cases. The part of the brain that is mostly affected by this disease is the hippocampus. Other parts that develop atrophy are the temporal and the parietal lobes as researched by Cipriani et al.(3)

### 1.4 Vascular Dementia

This sort of Dementia affects about 20% of Dementia sufferers. It is the second most widespread type and is caused by incompetent blood streams in the brain. Lack of oxygen and supplementary nutrient supplies to the brain lead to individuals collapsing. Some of the common symptoms include impaired judgments on decision making and organization(4). Brain imaging can be utilised to view the blood vessels affected by the disease.

### 1.5 Dementia with Lewy Bodies (DLB)

Referred also to as Lewy body disease, also has common symptoms. These symptoms include hallucinations, rigid muscles and a lack of concentration. This form is distinguished by irregular protein drops on brain stem nerve cells. This causes a disruption in the brain's regular functioning(4).

### 1.6 Parkinson's disease dementia (PDD)

Parkinson's disease is a progressive neurological disease. In its advanced stages, the disease can affect cognitive functioning(5). It is very important to note that not all individuals who have Parkinson's disease develop dementia but a significant number does. The most common symptoms of Parkinson's disease include tremors, muscle stiffness, slow and delayed comprehension and decision making.

### 1.7 Frontotemporal Dementia (FTD)

This form of dementia is exemplified by drastic personality changes and speech difficulties in the sufferer. There are three types of FTD, they include Behavioral Variant FTD (bv-FTD), Temporal Variant Dementia (TV-FTD) and Progressive Non Fluent Aphasia (PNFA)(10).

### 1.8 Creutzfeldt-Jacob Dementia (CJD)

The occurrence of this disease is very rare. It is caused by some viruses that affect the brain's normal functioning. This form of dementia has no treatment and advances rapidly over a period of few months. The common symptoms of the disease include, muscle stiffness, lack of coordination causing falls in geriatric individuals, and speech impairment(6).

### 1.9 Normal Pressure Hydrocephalus (NPH)

This sort of dementia engrosses the accretion of cerebrospinal fluid in the head cavities. This solution then leads to the upsurge of added force on the brain hindering the brain's ability to function normally(3). Symptoms that are associated with this disease include, problems in balance, bladder control, speech impairment and reduced problem solving abilities.

### 1.10 Huntington's Disease

This is an innate type of Dementia. It affects individuals' cognition, routine and relationships. The behavioral symptoms associated with this type of Dementia include memory problems, impaired judgments, mood swings and depression(5). Symptoms such as involuntary jerking movements of the face, body and sometimes hallucinations may also be observed in affected individuals.

### 1.11 Wernicke Korsakoff Syndrome

This type of Dementia is caused by a deficiency of vitamin B1 (Thiamine). When Thiamine ranks are condensed, brain cells are unable to regenerate sufficient vigor to help accurate functioning. Deficiency in B6, B12, vitamin E, Folate and Omega 3 are associated with increased Homocysteine level which lead or contribute to the occurrence of a stroke. This form of dementia is most common in alcoholics, but can also be caused by cancer, malnutrition, high levels of thyroid hormone and long term dialysis(3). The most widespread signs of the disease are lasting gaps of memory loss and affected short term memory.

### 1.12 Mild Cognitive Impairment (MCI)

As suggested by Rabins et al.(5) this type of Dementia may be caused by a medical illness, medications or environmental factors. Individuals with MCI are always aware and feel like they are in an unpleasant or dangerous state or situation. A number of the indications linked with this form of dementia include memory failure, prejudiced judgment and poor speech. Depression, anxiety, aggression and emotional apathy may also be experienced. This is mostly because of the patients' unawareness of the disease and its symptoms, causing frustration.

## 2. Vascular dementia

### 2.1 A brief summary of Vascular Dementia Disease

Vascular Dementia is a group of ailments that cause a decline in cognitive skills. The disease is characterised by condensed blood flow to the brain as a result of blockage problems with blood vessels supplying blood flow to the head(7). As a result, the brain eventually becomes damaged in a very short time and can even die due to lack of oxygen. Vascular dementia is a progressive disease that has significant effects on the life style of the affected person, friends and family members. There are many forms of Dementia. After Alzheimer's Disease, Vascular Dementia is the second most widespread Dementia disease.

The first discovery and diagnosis of Vascular Dementia was in 1899; it was named Senile Dementia. In 1969 Mayer Gross and his partners discovered that there are many different syndromes relating to different vascular mechanisms. They reported that hypertension contributes to the development of the disease in about 50% of patients(8). In this form of dementia, changes in thinking skills may sometimes occur very quickly due to cases of strokes, causing blockage in the main blood vessels leading to the brain. Thinking problems may either be mild or severe. Brain experts refer to this as Vascular Cognitive Impairments (VCI).

## 3. Varieties of Vascular dementia

There are many diverse forms of Vascular Dementia. They include; Mild Vascular Cognitive Impairment and Multi-Infarct Dementia, that are due to strategic single infarct. Vascular Dementia is also caused by hemorrhagic lesions, the Binswanger Disease, Sub Cortical Vascular Dementia and Mixed Dementia which is a combination of Alzheimer Dementia and Vascular Dementia diseases(7). Two main universal forms of Vascular Dementia Disease are the Multi-Infarct and the Binswanger's Disease.

### 3.1 Multi-Infarct Dementia

This is the most widespread type of Vascular Dementia Disease. It originates from numerous mini strokes or Transient Ischemic Attacks (TIA). The strokes source harm to the cortex of the brain in the area that is generally associated with erudition, reminiscence and verbal communication. A person suffering from this type of Vascular Dementia has better insight in its early stages than people suffering from Alzheimer's Disease because parts of their personality remain intact for a longer time. Signs of the disease include severe hopelessness, temper swings and Epilepsy(7).

### 3.2 Binswanger's Disease

In the past years, this disease has been assumed to be rare but the disease is relatively common. It is connected with stroke interrelated modification where the white matter deep in the brain is generally affected. As suggested by Etherton-Beer(7) it is caused by high blood pressure, solidification of the arteries and deficient blood flow. Common symptoms associated with the disease include sluggishness, complexity in walking, expressive ups and downs and lack of bladder management.

## 4. Signs of Vascular dementia

Vascular Dementia can from time to time have very equivalent forewarning signs to Alzheimer's Dementia. The signs are dissimilar depending on the part of the brain affected as suggested by Sharp et al.(9) The symptoms in most cases are always clear when occurring suddenly after a stroke. When changes in ones intellect and reasoning are clearly linked to a stroke, the condition is called Post Stroke Dementia. Additional distinctiveness of Vascular Dementia symptoms outline includes a sequence of mini strokes. The disease's warning signs can be divided into three categories; behavioural, mental and physical symptoms.

### 4.1 Behavioural Symptoms

These symptoms affect the way a person behaves naturally in their day to day activities. They include confusion, trouble paying attention, speech problems, reduced ability to organize thoughts, agitation and irritation, laughing or crying for no particular reasons and basically reduced ability to function in daily life activities. This includes experiencing difficulty doing things that used to come easily such as handling money or paying bills(10).

### 4.2 Mental Symptoms

These include indications linked with individuals' mental power skills. They consist of illusion and fantasy, confusions, slow judgment, common inattentiveness, personal alterations and odd mood swings, hallucinations, delusions and dizziness. People suffering from the disease also get lost frequently, even in familiar settings(10).

### 4.3 Physical Symptoms

These are indications that can be seen on the physical physique of the affected person. They include movement problems especially when it comes to balancing, hands and legs weakness, urinary and bowel incontinence, slowed movement tremors, moving with rapid and shuffling steps(10).

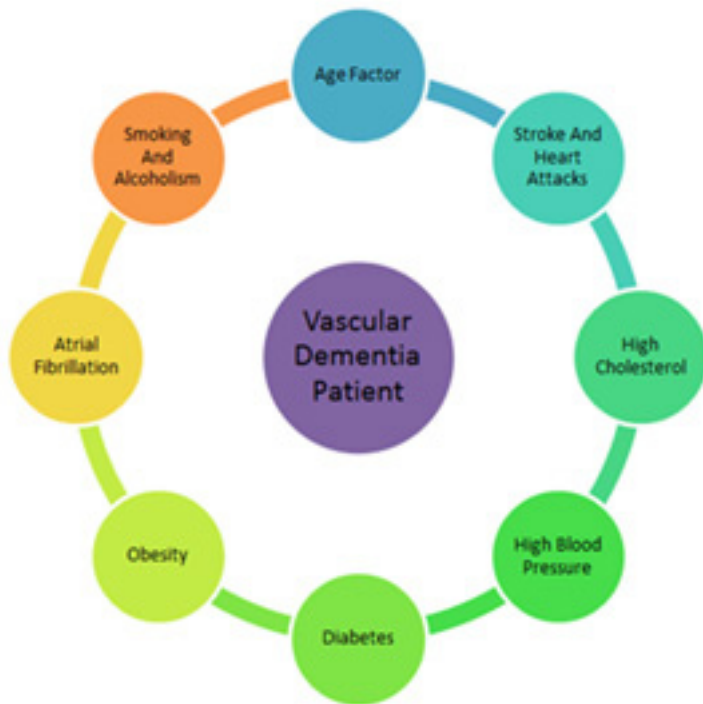
#### 4.4 Co-existence of Symptoms

It should be considered that behavioral, mental and physical symptoms of Vascular Dementia can co-exist across the different categorised symptoms.

### 5. The Risk Factors of Vascular dementia disease

According to Stephan et al.(8), the risk aspects of Vascular Dementia Disease are identical to the risk aspects of heart disease and stroke. They include;

**Figure 2: A diagram showing the risk factors of Vascular Dementia**



#### 5.1 Age Factor

As individuals become older, the danger of acquiring Vascular Dementia Disease amplifies. This is the reason most elderly people have the disease by the age of 85 and above(2).

#### 5.2 A History of Heart Attack and Strokes

The chances of developing Vascular Dementia Disease are higher in individuals who have suffered a heart attack. This is because brain blood vessels develop complications which may increase the risk of developing dementia(8).

#### 5.3 High Cholesterol

High levels of cholesterol are allied with the danger and intensification of Vascular Dementia. This is because cholesterol decreases the flow of blood that nurtures the brain(8).

#### 5.4 High Blood Pressure

When blood strain is high there is excessive stress on the body and the brains' blood vessels. This intensifies the likelihood of having vascular complications in the head as proposed by Sharp et al.(9)

#### 5.5 Diabetes

Increased glucose intensity can cause injury to blood vessels in the body including those in the head. This damage in blood vessels, particularly in the brain can pilot to contagion of Vascular Dementia and a stroke(8).

#### 5.6 Obesity

Overweight individuals are at a higher risk of developing Vascular Dementia than average weight individuals. This is because of their increased Cholesterol, Diabetes, Atrial Sclerosis, Thrombosis and Embolism and Aneurysm(8).

#### 5.7 Atrial Fibrillation

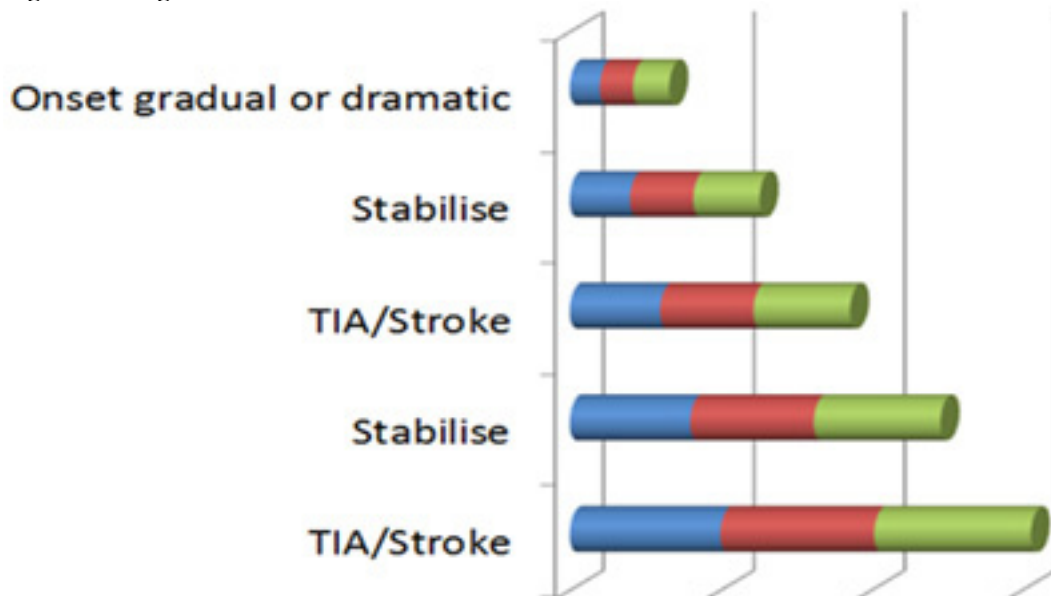
This is an irregular heart beat where the higher chambers of the heart begin to pound hastily and erratically out of harmonization with the upper cavity of the heart. The threatening of a stroke is caused by the poor blood current in the brain along with body components(8).

### 5.8 Smoking and Alcoholism

Martin-Ruiz et al. (11) assert that smoking and alcohol are common risk factors contributing to the development of Dementia. This is because smoking damages blood vessels, causing respiratory diseases including Vascular Dementia.

Considering the signs and symptoms of Vascular Dementia, individuals experience signs and symptoms as the disease progresses as shown in the below graph.

**Figure 3: Progression of Vascular Dementia**



### 6. Diagnosis of Vascular Dementia Disease

Vascular Dementia disease is normally diagnosed with the use of several techniques. These techniques include neurological examinations, brain scans which include the computerized tomography and magnetic resonance imaging (MRI) tests. The verdict of Vascular Dementia is pedestal on the presence of cognitive mutilation and cerebrovascular disease being the chief source of the signs(8). If ailment is assumed, numerous tests have to be executed to make sure accurate analysis takes place. Neuropsychological checks are carried out to evaluate the sub cortical brain utility. To assess and establish the location of brain damage, a brain examination is conducted using MRI and computerized tomography(1).

### 7. Managing Vascular Dementia Disease

There is no precise cure for ailment causing Vascular Dementia. The only available prescriptions are those that can assist in managing the intensification of the disease. Controlling the conditions affect the underlying health of the heart according to Stephan et al.(8) Pentoxifylline and ergolid mesylates (Hydergine) can be beneficial for increasing cerebral blood flow; significant improvement will be noticed in assessing intellectual and cognitive function and helpful in slowing down the rates at which Vascular Cognitive Impairment (VCI) progresses to further pathology. Medications to help control high blood pressure, high cholesterol, atrial fibrillation and diabetes can be prescribed(9). Aspirins or other anti-coagulant drugs can also be prescribed to reduce clotting in blood vessels in the appropriate

timely manner. A healthy diet, exercise and avoidance of smoking and excessive alcohol intake play a great role in the reduction of strokes and Vascular Dementia disease(3).

Drugs can be approved to alleviate agitation or gloominess to help Dementia patients. A carotid endarterectomy surgery can be performed to treat obstruction in the carotid arteries, the main blood vessel leading to the brain(8). Recent studies indicated that some medications used by Alzheimer's patients can be used for patients suffering from Vascular Dementia Disease in some circumstances. The medications include cholinesterase inhibitor medications such as Donepezil and Galantamine.

Team assessment and planning of care for patients is crucial. This includes Physiotherapy to help in movement and balance. Speech Therapy is also necessary to assist patients' speech impairment. Educating family members can also play a big role in helping patients at home. They can develop strategies to help in memory enhancement by writing and placing notes and reminders. The purpose of the below diagram and above explanation is to remind the public and treating doctor to follow team assessment and planning of care. This should be encouraged as it is not effective if only one doctor treats a Vascular Dementia patient whose symptoms and treatments vary across various medical fields. Therefore, having team assessment and planning allows the achievement of a successful treatment plan. Constantly reminding the patients of common details about themselves would also be helpful as suggested by Stephan et al. (8)

**Figure 4: Team assessment and planning of care**



**8. Lifestyle changes that can be used to manage and prevent Vascular Dementia**

Diagnosis of the disease can be challenging, especially because there is no cure for the disease. But with the correct guidelines on how to live healthy, there are several things that can be planned to maintain a sufficient lifestyle and manage the disease.

Regular exercise is one of the most important things in managing the effects of ailment. It is very important to at least take a 20 minute walk every day to help slow the progression of Vascular Dementia and help control weight, boost overall happiness and also relieve stress(11).

Seeking help, encouragement from friends, family and health experts are also very important whilst managing the disease. This is because such people are a very important part of affected individuals' lives(11).

A healthy diet is another important way of controlling the effects of Vascular Dementia disease. It helps to manage the cholesterol levels which will, in turn improve and slow the progression of Vascular Dementia symptoms.

Boosting individuals' memory, learning how to relax and manage stress is also another strategy to help control ailment. Meditation and yoga can also help in relaxation and reduce stress(11). Challenging the brain can be applied in the management of ailment. Training the brain to retain and retrieve memories, setting up a special routine plan sometime in the evening to try and recall all the day's activities help build memory capacity such as an eating plan, exercise plan, remembering medication and emergency numbers. Other activities such as painting and learning to complete puzzles can also help in building brain capacity(8). Keeping a routine can also assist in managing the effects of Vascular Dementia. Certain routines of the day can help in the avoidance of forgetting important things.

## 9. Case study

A 77 year old female visiting her sister from overseas (Middle Eastern Country) to Australia attended the clinic with her younger sister who is 67 years old for an assessment for her reduced cognitive abilities. Her sister who is residing in Australia is concerned about the older visiting sister and her short term memory loss for the past 2 years as stated by the family overseas. The patient had a stroke 5 years ago. Following the stroke she started to ask the same questions repeatedly. The patient recently had another minor stroke which was misdiagnosed as hypoglycemia by a family member, not a medical practitioner 12 months prior to visiting Australia. She had an episode of dizziness within one month of her arrival. Her sister noticed further decline in her cognition; she recently noticed that she is becoming more suspicious of her nephews and has been holding onto things. She has also lost interest in her daily activities and forgets to include the right ingredients and components in her cooking. Whilst taking her daily medications, her sister needs to remind her of the correct medication and dosage. As well as this, her second eldest son and his wife in her home country are helping her manage her finances and living arrangements as she hallucinates of mice travelling in the florescent tubes in the ceiling.

The patient has Hypertension, Diabetes, Cholesterol, Osteoarthritis and Osteoporosis. On the Mini-Mental Status Examination (MMSE), the patient scored 21/30 with abnormal clock drawing. On the Geriatric Depression Scale (GDS), the patient scored 2/15. A CT scan of the head was performed in Sydney, Australia revealing multiple lacuna infarcts in the right basal ganglion and left cerebellar region.

The diagram below is used to establish the principles of the ongoing management of Vascular Dementia patients.

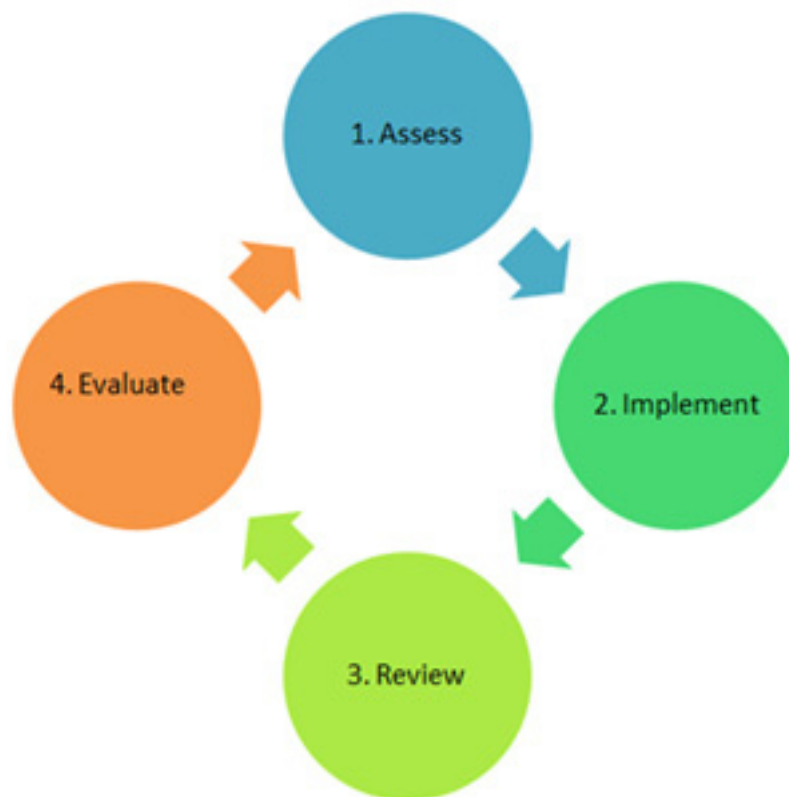


Figure 5: Management guide

## Conclusion

Vascular Dementia Disease is an ailment that affects the brain and the ability to think properly. There are several types of the disease and there is great importance to establish a correct diagnosis of Vascular Dementia from the treating doctor. Family is very important to patients who are affected as they require a lot of support from their families and friends to avoid cases of stigma. Although the disease has no known cure, its symptoms can be controlled by use of some medication, surgery, Occupational Therapy, a Registered Nurse, Physiotherapy, Speech Therapy, a Geriatric Specialist, Carer and the General Practitioner / Family Doctor working as a team.

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