

## Type 2 Diabetes Case Management

Name

Institutional Affiliation

## Type 2 Diabetes Case Management

### **Background**

There are two types of diabetes, Type 1 and Type 2. Type 1 Diabetes is least commonly and accounts for 5%-10% of all cases (Colberg, Sigal, Yardley, et al., 2016). Type 2 Diabetes is the most prevalent type of diabetes accounting for 90%-95% of all the case of diabetes (Colberg et al., 2016). Type 2 Diabetes is caused by progressive loss of pancreatic ability to secrete insulin, in addition to insulin resistance. It is caused by a host of factors including lifestyle and genetic factors (Australian Government, 2015). Some of these factors like diet and obesity are personal but others are external factors like aging, gender, and genetics. In addition, there are some medical conditions and medications like glucocorticoids, beta blockers, statins, and others that have also been linked to type 2 diabetes predispositions. This is a lifelong condition that requires the patient to have diabetes management knowledge because they have to live with the condition. Management of Type 2 Diabetes involves three pronged approach that includes drugs, diet and exercise (Powers et al., 2015). The patient is required to make dietary changes and engage in exercise to control body weight (Colberg et al., 2016). If diet and exercise fails to keep the blood sugar level under control, and individual might be required to use drugs like Metformin. In addition, type 2 diabetes patients are also required to monitor their blood sugar level more often. Failure to control blood sugar in type 2 diabetes may result to complications like retinopathy (Pop-Busuji, Boulton, Feldman, et al., 2017; Solomon, Chew, Duh, et al., 2017), cardiovascular diseases (American Diabetes Association, 2017a), and many others. Therefore, it is critical that a patient suffering from Type 2 Diabetes understands proper management strategies.

The aim of this study is to review the case of Sally Joseph, a Registered Nurse in Australia, who suffers from Type 2 Diabetes for the last ten years. The study will medical history of Sally Joseph, outlines a plan for care, and come up with a management plan.

### Case Presentation

Sally Joseph is a Registered Nurse working in Australia, but originally from India, Kerala State. She was born on 22<sup>nd</sup> of March, 1968, and has been diagnosed with Type 2 Diabetes for the last ten years. Her anthropometrics indicators show that she has a BMI of 27.2, indicating that she is overweight. She weighs 64.5kg with a height of 154cm. She has a normal blood pressure at 110/70. Currently, she is on Type 2 Diabetes medication including Metformin 1gm BD, Ganuvia 100mg daily, Rosuvastin 10mg daily, and Thyroxin 50mg daily.

Although she has good knowledge of diabetes as a nurse, she is not compliant to the care management strategies. She has never been referred to a dietician or a diabetic educator. The General Practitioner (GP) has never mentioned the need for her to seek services from either dietician or diabetic educator. However, she goes for a regulator eye check every year and does her HbA1 C every three months, usually ranging between 8 and 9. She went for the last HbA1 C check in February and it was 8.4. Her cholesterol levels were within the normal range while thyroxin levels were also stable. From time to time, she checks her fasting and postprandial levels, but not always the 2<sup>nd</sup> postprandial. In her checking, fasting level was 8 while the postprandial was 9.

On her diet, her breakfast mostly comprises of two servings of whole meal bread with vegemite, jam or banana; or oats in milk without sugar. For lunch, she either takes a small bowl of rice with vegetables, meat and fruit, or 2 servings of Indian bread (chappathi) with vegetables or

meat. For the afternoon snack, she takes a cup of tea with 2 biscuits. She repeats the same lunch menu for dinner.

She has a family history of diabetes. Her mother suffered from hypertension, Type 2 Diabetes, and dementia by the time she died at the age of 85 years. In addition, her brother also suffered from Type 2 Diabetes and an infected foot ulcer that cost his life. Her father is healthy and the other family members, 8 brothers and 4 sisters, are not affected by diabetes.

Socially, she is not that outgoing. She does out for dinner once in a week, which means most of the time she is at home or at work. Sally is married and currently lives with her husband and their two boys. While Type 2 Diabetes is likely to affect her family, she does not think that it has affected their lives because she has accepted the disease to be a part of her life.

### **Assessment**

There are a number of challenges in the case of Sally Joseph that require short and long-term management strategies. The arising issues from the case include:

- (a) Noncompliance to Type 2 Diabetes best management practices
- (b) Overweight
- (c) Poor dietary practices
- (d) Lack of physical exercises
- (e) Lack of social engagement

A management care plan should therefore delve on addressing these factors. The following are the aims and objectives of a management plan:

1. To increase compliance to Type 2 Diabetes self-management practices

- a. Reduce HbA1 C to less than 7.0 for most within a period of 3 months, to prevent complications.
  - b. Screen for microvascular complications at least once a year.
  - c. Carry out comprehensive medical evaluation to assess for comorbidities immediately.
2. To reduce weight
    - a. To reduce the BMI from 27.2 to less than 25.0 by losing about ten kilograms to achieve a healthy weight of 54.5kg.
    - b. To have a dietary and exercise regimen that assists her to lose ten kilograms within period of 12 months.
3. To improve dietary practices
    - a. To refer Sally to a dietitian for nutritional advice within the next one month.
    - b. To increase Sally's knowledge of food selection and preparation for a diabetes patients within the next one month.
4. To increase engagement in physical exercises
    - a. To educate Sally on the importance of engaging in physical exercise and simple aerobic exercise she can engage in.
    - b. To plan a physical exercise regime that ensures Sally engage in physical exercise for at least 30 minutes, 5 days a week.
5. To increase social engagement
    - a. To increase Sally's participation in social activities

### Management Plan

A good management plan should address all the concerns for a Type 2 Diabetes patient. In the above assessment, five main issues have been identified, and goals and objectives statement. Therefore, the management plan will address each of these issues, and how the goals and objectives will be achieved.

<b>Aim</b>	<b>Objective</b>	<b>Strategies</b>	<b>Outcome</b>
Increase compliance to Type 2 Diabetes self-management practices	Reduce HbA1 C to less than 7.0 for most within a period of 3 months, to prevent complications.	Nutrition education Physical exercise education Glucose monitoring strategies Encourage medication adherence	Increased daily blood glucose monitoring Medication adherence
	Microvascular screening once year	Recommend assessment of urinary albumin and glomerular filtration rate	Results showing the urinary albumin to creatinine ratio for assessment of kidney conditions.

	Comprehensive medical evaluation	<p>Medical tests for comorbidities like pneumonia, influenza, hepatitis</p> <p>Vaccination against influenza, pneumonia, 3-doses of hepatitis B vaccine</p>	
Reduce weight	<p>Reduce BMI from 27.2 to 23.0</p> <p>To lose 10kg of body weight to 54.5kg.</p>	<p>Change dietary practices</p> <p>Encourage physical exercise</p>	<p>Reduced selection of processed foods like biscuits</p> <p>Engaging in exercise</p> <p>Weight loss</p>
Improve dietary practices	<p>Increase nutrition knowledge</p> <p>Increase knowledge on food selection, preparation, and</p>	Refer to a dietician	<p>Selection of nutritious and health foods</p> <p>Using proper food preparation method</p>

	portion for servings		Service the right portion for carbohydrates
To increase engagement in physical exercises	Increase knowledge on important of physical exercises  Plan a physical exercise regime of 30 minutes a day for 5 days a week.	Give materials about importance of physical exercise  Give material illustrating different aerobic exercise  Plan with Sally a physical exercise regime	Understanding the relationship between physical exercise and diabetes  Identifying 5 aerobic exercises she can do at home  Adherence to physical exercise regime.
Increase social engagement	Increase participation in social activities.	Link Sally to a local social support group for Type 2 Diabetes patients	Increase participation in social activities.

(a) To increase compliance to type 2 diabetes best management strategies Reduce HbA1 C to less than 7.0 for most

The main aim of this plan is to help Sally increase compliance to Type 2 Diabetes best management plans. She has already admitted that she is noncompliant although she has previous



diabetic knowledge. Therefore, it is important to not only update her diabetes knowledge but also increase compliance to the best strategies to manage the condition. To keep blood sugar within the normal range, it is important to encourage Sally to practice good dietary habits, take medication on time, and continuously check on her glucose levels. This will be achieved through exercises, diet, and medication. Sally is poor in checking her fasting and postprandial levels, especially for the second check. Simple remind strategies like setting a phone reminder can help in the monitoring of postprandial levels. In addition, further screening for microvascular conditions like kidney condition will reveal any possible complications (American Diabetes Association, 2017b). Also a comprehensive medical evaluation assesses existences of comorbidities that may put the health of the patient at risk. The American Diabetes Association, (2017e) recommends vaccination against influenza and pneumonia, and 3-doses of hepatitis B vaccine for all adults with Type 2 Diabetes to low risk of comorbidities.

- (b) To reduce weight - reduce the BMI from 27.2 to less than 25.0 through dietary practices and exercises

Overweight and obesity are risk factors in Type 2 Diabetes. In addition to inhibiting effective blood sugar control, overweight and obesity are responsible for increased risk of complications like retinopathies (Australian Government, 2015), cardiovascular disease, and many others. Sally must reduce her BMI from the current 27.2, which predisposes her to diabetes complications, to a health BMI of below 25.0. She should lose about ten kilograms to a weight of 54.5 to achieve a healthy BMI of about 23.0. Therefore, effective weight control is paramount to continued wellbeing of the patients.

There are two overarching strategies that Sally can use lose ten kilograms, including

- i. Dietary practices –Sally need dietary education to understand proper food choice for a diabetes patient. Her current food regimen contributes to overweight hence she need to change diet to reduce the total daily caloric intake (Monteiro, Cannon, Moubarac, et al., 2015). However, a calculation of her average caloric intake shows that she is not taking too much calories, which means she should concentrate on exercise.
- ii. Physical exercise – A good exercise regime will help Sally to burn the calories that are converted to fat leading to additional weight. She should have a regime for aerobic exercises for 30 minutes at least 5 times a week.

(c) To improve dietary practices

Sally’s dietary practices are poor. Analysing her diet, her daily caloric intake is as follows:

Food	Calories
Whole bread (2 slices)	138
Banana (1 medium)	105
Chapatti (2)	220
1 cup of tea with milk	37
Biscuit (2 services)	98
Sandwich (1 serving)	340
Total Calories	<b>938</b>

The caloric intake is calculated based on the food selection given. The total caloric intake is 938 calories against a daily requirement of 2,000 to 2,200 for a woman of 49 years. This means there are some times she is likely to eat more servings to compensate for the energy needs. In addition, her food choices are poor for effective blood glucose control (Evert, Boucher, Cypress, et al., 2014). For example, two servings of biscuits are likely to spike blood glucose considering

the high glycaemic index of biscuits. One of the strategies to help Sally is to refer her to a dietician for nutritional advice within the next one month, within a multidisciplinary team framework (Martin & Lipman, 2013). The reason why she is referred is because a dietician will help Sally understand the relationship between Type 2 Diabetes and proper food choices (Funk, Klinker, Kocurek, Manchester, & Noskowski, 2016). In addition, a dietician will also help her understand the proper food selection and preparation methods to ensure that she consumes food that has maximum nutrients for her body. Increasing her nutritional knowledge is the best strategy to help maintain her blood glucose levels (Evert et al., 2014).

(d) To increase engagement in physical exercises

Physical exercise plays a critical role in the management of Type 2 Diabetes. In addition to burning excess calories that are converted to fat leading to additional weight, physical exercise also ensure effective flow of blood and nutrients to all parts of the body, thereby reducing the risk of complications (American Diabetes Association, 2017c). Exercises will play a critical role in helping her to lose the targeted 10kg to 54.5kg. According to Colberg et al. (2016), aerobic exercises plays a critical role in increasing insulin sensitivity, mitochondrial density, oxidate enzymes, reactivating blood vessels, improving immune functions, and improving cardiac output. Therefore physical exercise will help in prevention of complications like retinopathies, cardiovascular disease, and many others (Australian Government, 2015). There are two main objectives in this alternative:

- a. To educate Sally on the importance of engaging in physical exercise and simple aerobic exercise she can engage in.

To educate Sally on the importance of engaging in physical exercises, she will be given materials that illustrate the relationship between physical exercise and diabetes, considering that she will get this information from the referrals. The materials will be just to reinforce this knowledge and changing her thinking about physical exercise (American Diabetes Association, 2017d).

- b. To plan a physical exercise regime that ensures Sally engage in physical exercise for at least 30 minutes, 3 days a week.

Working together with Sally, it will be important to plan an exercise regimen that she will follow. The exercise regime should consider her age as well as her occupation. It is advisable that she engage in simple aerobic exercises for at least 30 minutes, not less than 5 days a week or at least 175 min/week of unsupervised exercises (Colberg et al., 2016). The exercise regime should comprise of simple aerobic exercise, such as, walking, jogging, cycling, swimming, and others that targets energy-producing systems. It also important to encourage her to participate in activities like Yoga that combine flexibility, balance and hesitance activities, which will help her gain complete wellness (Colberg et al., 2016).

- (e) To increase social engagement

Social engagement is important part of psychological wellbeing of people with Type 2 Diabetes (Young-Hyman, Groot, Hill-Briggs, Gonzalez, & Peyrot, 2016). Although not considered an important part of the health maintenance, social engagement helps a person to learn important social skills, especially when it comes to management of conditions like Type 2 Diabetes just by sharing with others who suffer from the same condition (Smith, Beland, Clyde, et al., 2013). Therefore, one of the strategies that will be a par to the management plan is to refer

Sally to a local diabetes support group from where she can share and learn more about diabetes management in addition to reinforcing compliance.

There are some limitations that are likely to derail attainment of these objectives. First, non-cooperation from Sally will make it difficult to achieve these aims because it all depends on her willingness to change (Phillips, Barb, Young, et al., 2015). Second, failure to find an appropriate local diabetes support group where she can attend easily will make it difficult for her to comply. Third, her income will determine if she can meet all the recommendations, including paying a dietician, buying recommended food, and others.

In conclusion, this study has provided a comprehensive management plan for Type 2 Diabetes for Sally, a Registered Nurse in Australia who has lived with the condition for the last ten years. The management plan aims at reinforcing compliance, improving her nutrition, increasing her engagement in physical exercise, and improving her social engagement. The management plan will increase not only her understanding of relationship between diabetes, nutrition, and physical exercise, but it will also help her to practice appropriate management strategies for the condition.

## References

American Diabetes Association (2017b). 10. Microvascular complications and foot care.

*Diabetes Care*, 40(Suppl. 1), S88-S98. Retrieved from

[http://care.diabetesjournals.org/content/38/Supplement\\_1/S58](http://care.diabetesjournals.org/content/38/Supplement_1/S58)

American Diabetes Association (2017c). 7. Obesity management for the treatment of Type 2

diabetes. *Diabetes Care*, 40(Suppl. 1), S57-S63. Retrieved from

[http://care.diabetesjournals.org/content/diacare/40/Supplement\\_1/S57.full.pdf](http://care.diabetesjournals.org/content/diacare/40/Supplement_1/S57.full.pdf)

American Diabetes Association (2017d). 4. Lifestyle management. *Diabetes Care*, 40(Suppl. 1),

S33-S43. Retrieved from

[http://care.diabetesjournals.org/content/diacare/40/Supplement\\_1/S33.full.pdf](http://care.diabetesjournals.org/content/diacare/40/Supplement_1/S33.full.pdf)

American Diabetes Association (2017e). 3. Comprehensive medical evaluation and assessment

of comorbidities. *Diabetes Care*, 40(Suppl. 1), S25-S32. Retrieved from

[http://care.diabetesjournals.org/content/diacare/40/Supplement\\_1/S25.full.pdf](http://care.diabetesjournals.org/content/diacare/40/Supplement_1/S25.full.pdf)

American Diabetes Association. (2017a). 9. Cardiovascular disease and risk management.

*Diabetes Care*, 40(Suppl. 1), S75-S87. Retrieved from

[http://care.diabetesjournals.org/content/diacare/40/Supplement\\_1/S75.full.pdf](http://care.diabetesjournals.org/content/diacare/40/Supplement_1/S75.full.pdf)

Australian Government (2015). *Australian national diabetes strategy 2016-2020*.

Commonwealth of Australia. Retrieved from

<http://www.health.gov.au/internet/main/publishing.nsf/content/3AF935DA210DA043CA>

257EFB000D0C03/\$File/Australian%20National%20Diabetes%20Strategy%202016-

2020.pdf

- Colberg, S.R., Sigal, J.R., Yardley, J.E., et al. (2016). Physical activity/exercise and diabetes: A position statement of the American Diabetes Association. *Diabetes Care*, 39, 2065-2079. Retrieved from <http://care.diabetesjournals.org/content/39/11/2065>
- Evert, A., Boucher, J.L., Cypress, M., et al. (2014). Nutrition therapy recommendations for management of adults with diabetes. *Diabetes Care*, 37(1), S120-S141. DOI: [10.2337/dc13-2042](https://doi.org/10.2337/dc13-2042). Retrieved from <http://care.diabetesjournals.org/content/36/11/3821>
- Funk, D.C., Klinker, G., Kocurek, B., Manchester, C.S., & Noskowski, D. (2016). Role of diabetic educator in inpatient diabetes management. *The Diabetes Educator*, 43(1), 28-33. Retrieved from <https://www.diabeteseducator.org/docs/default-source/default-document-library/role-of-the-diabetes-educator-in-inpatient-diabetes-management.pdf?sfvrsn=0>
- Martin, A.L. & Lipman, R.D. (2013). The future of diabetes education – Expanded opportunities and roles for diabetes educators. *The Diabetes Educator*, 436-446. DOI: 10.1177/0145721713486526. Retrieved from Martin, A.L. & Lipman, R.D. (2013). The future of diabetes education – Expanded opportunities and roles for diabetes educators
- Monteiro, C.A., Cannon, G., Moubarac, J., et al. (2015). Dietary guidelines to nourish humanity and the planet in the twenty-first century. A blueprint for Brazil. *Public Health Nutrition*, 1-12. doi:10.1017/S1368980015002165. Retrieved from [https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&cad=rja&uact=8&ved=0ahUKEwji26iq\\_PHTAhVCKywKHTwUAHsQFggrMAE&url=http%3A%2F%2Fecos-redenutri.bvs.br%2Ftiki-](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&cad=rja&uact=8&ved=0ahUKEwji26iq_PHTAhVCKywKHTwUAHsQFggrMAE&url=http%3A%2F%2Fecos-redenutri.bvs.br%2Ftiki-)

download\_file.php%3FfileId%3D1000&usg=AFQjCNG\_Ldl3PsOBBVfmDlisC7caD2b4  
DA&sig2=pvuCZeEymhuzCX65gm1CEg

- Phillips, L.S., Barb, D., Young, C., et al. (2015). Translating what works: A new approach to improve diabetes management. *Journal of Diabetes Science and Technology*, 9(4), 857-864. DOI: 10.1177/1932296815576000.
- Pop-Busui, R., Boulton, A., Feldman, E., et al. (2017). Diabetic neuropathy: A position statement by the American Diabetes Association. *Diabetes Care*, 40, 136-154. DOI: 10.2337/dc16-2042. Retrieved from <http://care.diabetesjournals.org/content/diacare/40/1/136.full.pdf>
- Powers, M. et al. (2015). Diabetes self-management education and support in Type 2 Diabetes: A joint position statement of the American Diabetes Association, the American Association of Diabetes Educators, and the Academy of Nutrition and Dietetics. *Diabetes Care*, 38, 1372-1382. DOI: 10.2337/dc15-0730. Retrieved from <http://care.diabetesjournals.org/content/early/2015/06/02/dc15-0730>
- Rawlings, A.M., Sharrett, A.R., Schneider, A.L., et al. (2014). Diabetes in midlife and cognitive change over 20 years: A cohort study. *Annals of Internal Medicine*, 161, 785-793. DOI: 10.7326/M14-0737.
- Smith, K.J., Beland, M., Clyde, M. et al. (2013). Association of diabetes with anxiety: A systematic review and meta-analysis. *Journal of Psychosocial Research*, 74, 89-99. DOI: 10.1016/j.jpsychores.2012.11.013
- Solomon, S.D., Chew, E., Duh, E.J., et al. (2017). Diabetic retinopathy: A position statement by the American Diabetes Association. *Diabetes Care*, 40, 412-418.



Young-Hyman, D., Groot, M., Hill-Briggs, F., Gonzalez, K.H., & Peyrot, M. (2016).

Psychosocial care of people with diabetes: A position statement of the American Diabetes Association. *Diabetes Care*, 39, 2126-2140. DOI: 10.2337/dc16-2641. Retrieved from <http://care.diabetesjournals.org/content/40/3/412>