# Universal Prescription in Diabetes

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**Abstract:** *This paper titled universal prescription in diabetes propose a tool for inspired medical person and patients to improve treatment planning and outcomes .It is useful in all type of diabetes and at all ages. The prescription remain the same right from primary care to tertiary care, and diabetes with or with out co-morbidities. Appropriate examples are cited .The paper is based on patient and laboratory data that was naturally available to me while resorting to treatment modalities aimed at overcoming therapeutic inertia. The prescription has a nominator comprised of disease factors and a denominator which constitute the prescription of medicines. The prescription will have to be revised as and when needed. The nominator part if properly prepared and maintained will predict about course of ones diabetes and co-morbidities.*

**Keywords:1.** *Co-morbidities, 2.Therapeutic inertia 3.Universal prescription*

## I. Introduction

I have been reviewing hundreds of diabetes cases every month since last eight years. Among the patients diabetes, hypertension and dyslipidemia of nearly 80% cases are not under control, even though their treatments were initiated by specialists in most cases. The rule of 50%-the rule of halves –is worth remembering in this context[1]:- .Among all people with diabetes only 50% are diagnosed. Of those who are diagnosed, only 50% receive care, and from this group only 50% achieve desired outcomes. The final picture thus reveals that only 6% will manage to live well and attain successful outcomes.T2DM is becoming increasingly common in younger people also, especially adolescents as a continuation of childhood obesity. It is now well known that in order to prevent micro vascular complications one has to achieve and maintain HbA1c% below 7 through out his life. Macro vascular complication prevention need, besides blood sugar control, maintaining of blood pressure and lipids at optimum levels. The MRFIT study [2] results emphasized that even mild to moderate levels of both hypertension and dyslipidemia had a multiplicative adverse impact on the risk for coronary heart disease. Even though we now know how to diagnose and manage these problem sufficiently earlier so as to minimize ones CHD risk, we do not reach the target. Upon personal analysis, the commonest causes for the poor outcome of treatment of diabetics identified are listed here.

A. Patients do not return to their consultants for review .They continue treatment as per the first prescription for years mainly because they were not given proper instructions about next review.

B. Body weight of the patients were not considered during the first consultation so much so that many patients received inadequate dose of individual drugs.

C. Blood pressure were not checked or followed except in cases where in the first presentation of the patient was due to a sequele of hypertension like stroke. Those diagnosed to have hypertension in most cases were initially managed with a small dose of Amlodipine or Enalapril for many years.

D. Lipid analysis was confined to random total cholesterol, thus denying patients the benefits of control of individual lipid components identified in routine lipid profile study.

E. Insulin was not started in many in spite of poor control with multiple oral medicines.

F. Patients stopped anti diabetic medications including insulin with out consulting their doctor following events of hypoglycemia, and not trying to analyse how their drugs-food –activity balance was disturbed, and restarted only after weeks or months later when they are identified as having a complication due to hyperglycemia.

G. Drugs that increase insulin resistance are prescribed for many conditions with out evaluating diabetic status during course of such treatment. Earlier in my paper CHIKUNGUNYA-A DIABETOGENIC STRESS published in 2013, I have described the diabetogenic potential of steroid use in chikungunya patients.

H. Many laboratory results were incorrect upon a clinical correlation. During a state wide survey in Kerala in 2015 as a part of SAFE KERALA [an initiative to prevent and check infectious diseases and promote public health under the auspices of Kerala state health department, started in 2014] it was identified that many labs employ unqualified person and the testing were done by drawing blood with same syringe from different patients.

I. Benefits of treatment are nullified by habits like cigarette smoking.

The universal prescription is an effort to minimize laxity of medical person and patients in their team work in attaining standards of targets of control.

## II. Material And Methods

**2.1: Preparation Of The Nominator:** A,B,C and D are the key letters.

**2.1.1:** A include adiposity, which is best represented by body weight. HbA1c% is also attached to A. It is written as denominator of body weight. Example A 70/8 Here 70 is body weight in Kg and 8 a given HbA1c% of a patient.HbA1c% estimated within previous 3 month only is mentioned and values older than that can be ignored. In this patient A itself will give a clue that his management in the recent past was inadequate. This patient if improve by next review the picture will be something like A 66/7.Instead, if A is something like 66/8.4 an endocrine disease or debilitating disease could be the cause. If HbA1c% and body weight estimation was not done mark Ax/x which is highly undesirable and injustice.

**2.1.2:** B stand for blood pressure and heart rate. Written as B bp/hr. B x/x means both BP and HR were not measured.B120-80/76 is normal. If this patient become B140-90/92 he is hypertensive going for LVF. Combining A and B together, for example, if A is70/8 and B120-80/76, during a later review change to A 74/8.4 and B 140-90/100 it is suggestive of water retention and hypertension probably of renal origin. Do appropriate investigations. Blood pressure and heart rate recorded by doctors with all relevant precautions only may be considered in nominator record.

**2.1.3:** C stand for cholesterol. For the sake of uniformity I propose Non HDL Cholesterol as most representative of ones dyslipidemia.C130 can be taken as normal lipid level in a diabetic under 30 years of age and without any co-morbidities. If the value is 180 mg% and he was put on a statin earlier it is written as C180/s and if not put on statin it can be represented as C 180/x. If lipid study was not done it is written as Cx. A lipid study done more than 3 month ago may be ignored for this tabulation. The name and quantity of statin need not be mentioned in the nominator.

**2.1.4:** D stand for simultaneous consumption of a diabetogenic drug like steroid, thiazide diuretic etc. for a particular condition along with anti diabetic medicines. This will prompt the physician to cut short the quantity and duration of such drugs to the minimum. Dx means there are no diabetogenic drugs. All diabetogenic drugs in their order of starting are to be entered here.

**2.1.5:** Considering certain combinations of the nominators as examples:
A70/8 B120-80/76 C130/x Dx if change to A74/8.4 B140-90/84 C150/s D thiazide it means that he is away from targets of control and suggest revision of patients diet history and change of medicines in terms of quantity and physiology. Comparison is very easy for any consultant and patient get the benefit.

### 2.2 The Denominator

This is nothing but an intuitive prescription of medicines needed to control ones diabetes and co-morbidities in a way friendly to his age, weight, lifestyle, employment and economic status. The effort should follow creation of patient data [the nominator] which only give the consultant the right to prepare the denominator. The list of anti diabetic medicines are prepared in such a way that the medicine started first in the course of ones treatment is written first and next medicine as second and so on. This will give a glimpse of past history of the treatment. The usual picture is, insulin come as the third or fourth in the list after Metformin, Sulfonyl urea and so on.

2.2.1:The weight of the patient should always be recorded and medicines when ever possible are expressed linking to body weight. Insulin is prescribed with a caption that express how much units/kg/day and then how many unit at a specific time of a day indicating the variability of each dose with respect to his occupation and diet. Sulfonyl ureas are expressed as how much mg/day initially and then how many mg for each time of dosing expressing the range of variability to be considered according to ones occupation and diet to prevent food-medicine-activity-mismatch,and,hypoglycemia.Examples:
2.2.1.a: A 70 kg person is on 0.4 units/kg of Inj: Human Mixtard. He develop tiredness 3-4 hours after starting his forenoon works which would get relieved by sweet drinks. This complaint is not there on holidays. During night he takes a variable diet prepared at his home itself. His daily total dose of insulin is 28 units. Its 2/3 will be 18 units conventionally given in the morning. Deciding a variability for working day to holiday, his morning dose can be written as 14-18 units. This patient in real life got rid of his fore noon hypoglycemia by this method. Variable dosing of night time medicines are done only for medicines other than Metformin if FBS is elevated on more than one occasion.

**2.2.1.b:** A person on BIDS[Bed time Insulin and Day time Sulfonyl urea] presented with FBS of 320 mg% indicating that his treatment is inadequate. HbA1c% assay was done only two years ago. The nominator prepared was as follows: A74/13 B140-84/90 C180/s D Thiazide. He was on three rice borne meals per day. His FBS-became142 mg% in one week with the following regimen. Diet changed to two rice-borne and a supper wheat-borne item with the advice for quantity restriction .Inj:Human Mixtard 20 units s/c twice daily, Tab: Metformin 500mg 1-0-1                                                                                                     :
Tab:Metoprolol 25mg  1-0-1 was supplemented to anti hypertensives. This case explain the need for frequent evaluation of diabetes patient, a task made easy when the universal prescription is used.

**2.2.2:** Cost of all medicine increase steadily over years. Many people actually cannot purchase the medicines regularly and they stop treatment. Spurts in cost of treatment occur when consultants try to prescribe every new medicines without considering their essentiality. The consultants should be familiar with cost of common medicines they prescribe. Patient should be informed of daily expense for a given prescription before leaving the consulting room itself so that he can demand for a prescription friendly to his pocket. Diabetes of most of the patients can be controlled by judicious use of Metformin, Sulfonyl ureas and Inj:Human Mixtard. Without controlling diabetes there is no benefit in incrementing on associated drugs like statins.

**2.2.3:** During fasting and Ramzan: Action peaks of individual drugs are better avoided when one is likely to be hungry for hours to prevent serious hypoglycemia. Avoid long acting oral medicines like Glibenclamide.

**2.2.4:** Reversal of duty time[day/night]: Food- activity mis-match is prevented. A snack is taken 4-5 hours after a meal and main dose of a medicine if he is continuing to work beyond 2- 4 hours.                                :
**2.2.5:**The general plan of treatment is control of post prandial hyperglycemia in support of the observations that such an approach prevent complications of diabetes to the best[3]

## III.    Results

I observed good results when a prescription is preceded by preparing a standard patient data and later transcribing it  to the treatment part. Many patients were eager to repeat their HbA1c% after 3 months of revised treatment if the initial HbA1c% were high. Giving optimum dose of a single medicine improved the clinical picture in most patients who did not attain targets with smaller dose of multiple drugs used over a long period. Imposing variability for dose of a medicine of a specific time or more considering the physical activity by virtue of ones occupation/exercise and/or diet helped in reducing incidents of hypoglycemia. All these helped in increasing patient adherence and reducing cost of treatment.

Universal prescription prepared on two different occasions by the same or different consultants can be used effectively to continue treatment in e-health also even if patient migrate from one region to another. It is similar to a good treatment summary and ideal method to store as computer data.

Starting anti hypertensives early especially in overweight patients increased their exercise tolerance which is directly beneficial for diabetes management. Adding or substituting drugs to correct tachycardia improved sense of well being. All these emphasize the need for regularly checking and documenting blood pressure and heart rate during every visit to a consultant. An enquiry about other medicines one may be taking proved to be very useful  to identify presence of diabetogenic drugs.

## IV.    Discussion

Progressing beta cell loss, patient gaining weight  and therapeutic inertia are the common causes for poor response to treatment in diabetes. A patient well under control for sometime can silently go for high blood sugar if the routine fixed investigations advised are not done, a mistake committed by many consultants. Working on this issue I propose the universal prescription as a gentle tool to improve treatment planning and outcome. The nominator part is an evaluation of previous treatment the patient received, at the same time act as the guide for future treatment. An x mark should be treated as an insult by both patient and the consultant. Every medicines act in a dose dependent way and it is the responsibility of the consultant to find out the optimum dose in a given patient considering patients age, weight, renal function and other medications. Now the essential difference predicted is that patient data also has to appear in every final prescription. If a patient with agreeable nominator data and a optimum denominator  present with an elevated blood sugar report the cause could be of recent origin only,like infection, mental stress, change in eating habit, substitution of existing medicines with low quality medicines, loss of effectiveness of current insulin vial due to improper storage and so on; and can be managed accordingly. Lab to lab variation can happen in investigation result due to difference in  methods of testing as in the case of HbA1c% which can be done using different methods. So it is better to do a persons investigation from same lab as far as possible. After attending to a variation in blood sugar by appropriate measures consultant verifies whether there had been any major change in the nominator values to be addressed.

## V.    Conclusion

I propose the universal prescription discussed so far be implemented in long term management of diabetes globally to reduce the burden of diabetics not reaching the targets of treatment. Following the ABCD key would be beneficial for timely diagnosis of component risk factors of CHD in every person even if only a minimal abnormality is detected during an opportunistic check-up. Universal prescription also have application in diabetes prevention strategies by virtue of its capability to identify transition from pre-diabetes to diabetes and vice versa. Readers can design the prescription their own. Kindly mail me your models.

## References

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