

**Short Commentary**

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**Precision health care for diabetes slowly will become reality in Indonesia: An opinion****\*Corresponding Author: Satriya Pranata**

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**Abstract**

Adherence to a guideline and evidence-based practice is a crucial factor defining quality of care and more precise on treatment, demands and targets impose challenges. The approach in this direction has been termed precision medicine then involved become precision healthcare where patient preference, patient-oriented, evidence-based care, interprofessional collaboration, and self-management are core elements. Precision health care can improve the effectiveness of treatment and provide current model exclusive care for individual cases of diabetes patients, and establish a treatment plan through more accurate diagnosis. Therefore, services for diabetes patients will be more comprehensive, increase the satisfaction and decrease the risk of complications due to diabetes in the future. Information on how to apply precision health care to diabetic patients in this study will be valuable information for health professionals in clinical settings. This approach has become a trend in developed countries and potentially to implement in other countries, especially Indonesia.

**Keywords:** Precision medicine; Diabetes mellitus; Personal health services; Patient care team.

**Introduction**

Adherence to a guideline and evidence-based practice is a crucial factor defining quality of care of diabetes patient services [1]. A guideline typically defines a set of recommendations along with eligibility criteria that restrict their applicability to a specific group of patients with the purpose of disseminating such knowledge and standardizing care to ensure the highest quality of care [2,3]. In certain situations, a deviation from such a guideline and practice is desirable and helps address the needs and peculiarities of patients with diabetes. So far, hospital- and community-based interventions in Indonesia to avoid diabetes complications have long been based on evidence-based practice and guidelines for diabetes care [4]. However, more precise intervention for patients with diabetes based on the availability of health data, treatment demands and targets can be executed and imposes challenges in the future [5,6].

The approach of precise intervention has been termed as precision medicine and becoming a trend in clinical settings. Especially after former US President Obama's launch this approach in early 2015. The primary aim of precision medicine is to improve clinical outcomes for individual patients through more precise treatment targeting by leveraging genetic, biomarker, phenotypic, or psychosocial characteristics that distinguish a given patient from others with similar clinical presentations [2]. Moreover, patient care and preference, patient-oriented, evidence-based care and self-management, referred to precision healthcare [7]. Over time, the approach has been implicated on patients with diabetes and becoming a new trend in clinical settings in developed countries but not really popular in Indonesia [6].

Core elements of the precision medicine and precision health care model for diabetes are based on professional team

care, including medical specialists, nurses, nurse specialists, pharmacists, and nutrition. Every professional should implement cross-domain communication platforms and cooperation models under various specializations [8]. The multi-integrated cross-domain teams combined, make services for diabetes patients more comprehensive, especially if patients and families are involved in decision making and the preparation of care programs and goals. Obviously, patient satisfaction will increase also because the approach used is more attentive on patient center care.

Patient center care can improve the effectiveness of treatment and providing current model exclusive care for individual cases of diabetes patients, and establish a treatment plan through more accurate diagnosis [1,5,9]. This type of care is not only fixated on medical care but also takes into account patient glycemic control, glycemic target, and personalized care goals [7]. Glycemic control refers to plan of patients for reducing HbA1C based on all available information including medical history and electronic databases of outpatient medication [10,11]. Glycemic target refers to the strategy for achieving the clinical outcomes of patients using patient characteristics, comorbid conditions, diabetes complications, duration of diabetes and risk of hypoglycemia and hyperglycemia [12-14]. Further personalized care goal refers to consideration of the whole individual, including the complex interplay of comorbid conditions, psychosocial and functional status, and individual needs [15,16]. Throughout the care process support which more personalized, patient outcomes about diabetes self-management will improve [17].

This concept should start to become a new approach in the care of diabetic patients, moreover most of the study from scholars in developed countries has proven the impact of precision medicine and precision health care for patients with diabetes. Few researchers in Indonesia have started to initiate a study using a precision health care approach in diabetic patients through patient care and preference, patient-oriented, evidence-based care and self-management and interdisciplinary research collaborations between doctors, nurses and nutritionists [6]. An overview of how to implement precision health care programs and differences between traditional health education and precision health program for diabetes are also provided in Table 1.

### Strengths and practical implication of study

This study offers information about precision health care as a new approach for patients with diabetes. The preparation of the implementation of precision health care programs for diabetic patients through the 17 steps listed in Table 1 is expected to facilitate health workers in understanding the principles and methods of implementing precision health services in clinical settings. In general, the steps to implement precision health care in diabetic patients was divided into several major steps namely conducting brief reduction teaching, assess the risk of complications among patients due to diabetes and separated patients into small groups for brainstorming. In brainstorming, patients can share information and learn together how to achieve glycemic control and glycemic targets. In addition, through brainstorming, healthcare professionals can list the patient's priorities for implementing self-management while at home. This program can be evaluated every three months through laboratory test indicators such as HbA1c, cholesterol, triglycerides, triglyceride glucose index and blood glucose levels. Laboratory tests can be a good predictor of the risk of complications among patients with diabetes in the future.

### Conclusion

More and more health professionals are starting to conduct studies, read and understand about precision health care concepts, we predict that in the future precision health care for diabetes slowly will become a reality in Indonesia.

**Table 1:** Comparison of traditional intervention and precision health care program for patients with diabetes.

Topics	Traditional intervention	Precision health care program for diabetes
<b>What is taught?</b>	Health education, routine hospital check, and formulation of health intervention or glycemic targets of patients with diabetes	Providing integrated care through interdisciplinary collaborative practice based on personalized genetics, lifestyle, glycemic targets, and glycemic control of patients to improve patient self-management.
<b>What is the goal?</b>	Behavior change and normal physical outcome (HbA1c, body mass index, blood pressure, and cholesterol levels)	Achieving physiological outcomes (HbA1c targets, blood glucose targets and control), reducing microvascular complications, promoting diabetes self-management, promoting self-care behaviors, facilitating behavioral change (eating more healthily and becoming more physically active), ensuring effectiveness of treatment and care, improving self-efficacy, and improving psychosocial outcomes.
<b>Who is the internal team?</b>	Professional only	Health care professionals (nurse educators, specialist nurses, physicians, physiotherapists, pharmacists, dieticians) and patients with diabetes.

<p><b>Procedures</b></p>	<ol style="list-style-type: none"> <li>1. Diabetes health education in the hospital only face to face using a pamphlet without ever monitoring patient understanding or glycemic control or continuous targeting of the patient</li> <li>2. Patient time with physician, nurse, or dietician is limited due to large number of patients</li> <li>3. Patients are very rarely invited to discuss their expectations and difficulties encountered when suffering diabetes.</li> <li>4. Targets that should be achieved by patients have never been discussed. Therefore, targets are not the patients' but the professionals.'</li> <li>5. Health education by health care professionals is not standardized.</li> <li>6. All information provided to patients is still based on the experience and knowledge the health worker.</li> </ol>	<p style="text-align: center;"><b>Preparing for implementation of precision health care program for diabetes</b></p> <ol style="list-style-type: none"> <li>1. Training of health care professionals to be facilitators in the precision health care program are needed.</li> <li>2. Facilitators will attend a self-management training course led by two experienced self-management practitioners and trainers.</li> <li>3. Training will consist of personal case management and monitoring, emphasizing process of care issues and system navigation related to diabetes; diabetes self-management education and support, highlighting the need for knowledge, skill acquisition, and problem solving related to day-to-day management; behavior modification; goal setting and reinforcement using motivational interviewing.</li> <li>4. Facilitators will be taught how to use the self-management manual and will practice skills for managing groups.</li> <li>5. After training, facilitators will be supported to deliver interventions.</li> </ol> <hr/> <p style="text-align: center;"><b>Applying the precision health care program for diabetes</b></p> <ol style="list-style-type: none"> <li>1. Facilitators will conduct diabetes coaching to ensure that all participants have a clear understanding of the importance of, and how to manage, their diabetes in relation to achieving the glycemic target.</li> <li>2. Diabetes coaching will be carried out for all patients in a convention hall. The process will be carried out by a physician, diabetes specialist nurses, nutritionists, and pharmacists. Each health professional is given 30 minutes to deliver the material and answer the patient questions.</li> <li>3. After diabetes coaching is completed, the nurse will conduct an assessment to determine the level of patient self-management and what percentage of patients are at risk of complication. Risk reports will be personalized to describe individual complication risk. Patients with a high risk will be treated by a subspecialist physician.</li> <li>4. Patients will be divided into groups (10–15 patients) and each group is to contain patients with the same level of self-management.</li> <li>5. Participants in each group will be asked to brainstorm difficulties that they experience in achieving the glycemic target and specific target behaviors (medication adherence, healthy eating, physical activity, foot care, etc.).</li> <li>6. The facilitator's activities will be video recorded with the consent of the patient to investigate intervention fidelity.</li> <li>7. Difficulties that several members of the group will be experiencing or would like to discuss will be selected, and strategies to overcome them elicited from the group. Strategies for several difficulties can be discussed, subject to the requirements of the group.</li> <li>8. A list of patient needs will be established, following by prioritizing the needs.</li> <li>9. Participants and facilitators will set a goal and develop a detailed written action plan for achieving glycemic target and medication management of patients, based on patients' need and priorities. Any plans they must make to overcome anticipated difficulties, frequency, and intensity for the action plan will also be discussed.</li> <li>10. From the recording of the discussion between patients and facilitators, all health professionals will hold discussions based on interdisciplinary communication platforms and cooperation models under various specializations for 20–30 minutes. Discussion will not only focus on medical care but also consider patient preferences, quality of life, willingness, and care goals.</li> <li>11. Health professionals will provide support for the writing of the action plan and then will model reporting on the plan through coaching interventions with patients (face to face, by telephone or internet, or a combination of these).</li> </ol>
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		<p>12. Tailoring of coaching interventions will be implemented based on patient needs and preferences as discussed with health professionals</p> <p>13. Patients will report their eating, exercise, and medication from home using an internet program provided by the hospital and a mobile device.</p> <p>14. Glucose monitoring will be implemented to enable patients to evaluate their individual response to therapy and assess whether glycemic targets are being safely achieved.</p> <p>15. All patient reports will be connected to hospital data and can be accessed by the team of health professionals (nurse educators, physicians, and dietitians)</p> <p>16. Based on patient data (diet, exercise, and medication), the health professional team will make decisions regarding the coaching process and how often patients should check their blood sugar levels individually at home, diet management, exercise frequency, and medication doses</p> <p>17. After 3 months, participants will report their progress and whether a goal has been partially achieved or not achieved. Outcomes (physical, self-management, psychosocial, diabetes self-efficacy, risk assessment for diabetes complication) will also be evaluated.</p>
<b>Time</b>	5–10 minutes	<p>40–60 minutes for brainstorming and discussion with patients</p> <p>15–60 minutes per session for coaching by telephone or face to face</p> <p>20–30 minutes for interdisciplinary collaboration or discussion</p>
<b>Theory based</b>	Communication	Communication, psychosocial support, self-management, self-efficacy, diabetes control, diabetes coaching, interdisciplinary collaboration skills, genetics, behavior
<b>Outcome evaluation</b>	Evaluations currently made are immediate and related only to laboratory tests or physical outcome (HbA1c, blood glucose, etc.), without evaluation of self-efficacy or psychosocial outcomes.	Physiological outcomes (HbA1c, body mass index, blood pressure, and cholesterol levels), self-management outcomes (dietary patterns, physical activities, medication adherence, self-monitoring, and diabetes knowledge), psychosocial outcomes (quality of life, empowerment, and diabetes-related distress), diabetes self-efficacy, risk assessment for diabetes complication, and medical cost will be evaluated.

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