

# Diminishing Burden of Type 2 Diabetes Mellitus in the Community through an Interprofessional Collaboration (IPC) Approach

---

APEC Health Working Group

January 2026







# **Diminishing Burden of Type 2 Diabetes Mellitus in the Community through an Interprofessional Collaboration (IPC) Approach**

**APEC Health Working Group**

**January 2026**

APEC Project: HWG 101 2024A

Produced by  
Manado Health Polytechnic Ministry of Health, Indonesia

For  
Asia-Pacific Economic Cooperation Secretariat  
35 Heng Mui Keng Terrace  
Singapore 119616  
Tel: (65) 68919 600  
Fax: (65) 68919 690  
Email: [info@apec.org](mailto:info@apec.org)  
Website: [www.apec.org](http://www.apec.org)

© 2026 APEC Secretariat

APEC#226-HT-04.1

## TABLE OF CONTENTS

<b>TABLE OF CONTENTS.....</b>	iv
<b>A. Day 1: Tuesday, 1 July 2025 .....</b>	2
<b>1. Opening Ceremony .....</b>	2
1.1 Welcome remarks .....	2
1.2 Report by Host Economy.....	2
1.3 Remarks .....	3
1.4 Keynote Speech .....	3
1.5 Opening Remarks .....	3
<b>2. Plenary and panel sharing sessions 1 .....</b>	4
2.1 Plenary Session 1 .....	4
2.2 Panel Sharing Session 1 .....	12
<b>3. Plenary and panel sharing sessions 2 .....</b>	19
3.1 Plenary Session 2 .....	19
3.2 Panel Sharing Session 2 .....	23
3.3 Discussion.....	28
<b>B. Day 2 – Wednesday, 2 July 2025 .....</b>	33
<b>1. Plenary and panel sharing sessions 1 .....</b>	33
1.1 Plenary Session 1 .....	33
1.2 Panel Sharing Session 1 .....	37
1.3 Discussion.....	40
<b>2. Plenary and panel sharing sessions 2 .....</b>	42
2.1 Plenary Session 2 .....	42
2.2 Discussion.....	46
<b>3. Closing Ceremony.....</b>	48
<b>Appendix 1. Workshop Recommendation.....</b>	50

## **SUMMARY**

The APEC Diabetes Mellitus Workshop 2025 was held on 1–2 July 2025 in Manado, Indonesia, hosted by the Manado Health Polytechnic, Ministry of Health of Indonesia, under the framework of the APEC Health Working Group (HWG).

The theme, “Diminishing Burden of Type 2 Diabetes Mellitus in the Community through an Interprofessional Collaboration (IPC) Approach”, reflected APEC’s commitment to addressing non-communicable diseases (NCDs) as a regional priority, acknowledging that Type 2 Diabetes Mellitus (T2DM) is a growing health and economic challenge across member economies.

A two-day workshop brought together approximately 150 participants, both onsite and online, reflecting broad engagement across the Asia-Pacific region. In-person representation included delegates from APEC member economies; Brunei Darussalam; People’s Republic of China; Indonesia; The Russian Federation; Thailand; and Viet Nam. The event also convened a diverse array of stakeholders, among them leading health professional associations such as the Indonesian National Nurses Association (PPNI), the Indonesian Medical Association (IDI), and the Indonesian Society of Endocrinology (PERKENI). Further participation came from the Public Health Laboratory, the Health Quarantine Agency, the directors of both private and vertical hospitals in North Sulawesi, and the leadership of Manado Health Polytechnic institutions from across Indonesia.

The workshop identified interprofessional collaboration (IPC) as a cornerstone of sustainable diabetes management, emphasizing that collaboration must extend beyond healthcare professionals to involve families, community leaders, and cultural influencers actively. Delegates underscored the importance of embedding interprofessional education (IPE) into health curricula and professional training to ensure future generations of health workers are equipped to collaborate effectively. At the policy level, economies were encouraged to adopt evidence-based interventions, including fiscal measures such as sugar-sweetened beverage (SSB) taxation, complemented by urban planning strategies that promote healthier living environments. Participants also highlighted the transformative role of digital health, telemedicine, and data-driven innovations in expanding access and improving patient outcomes, particularly in underserved areas.

For long-term impact, the workshop stressed that IPC and community-based interventions must be supported by sustainable financing, enabling policies, and integration into economy health systems. Economies were encouraged to pilot innovative IPC models and share lessons in future APEC Health Working

Group (HWG) meetings, while also exploring collaborative projects, capacity-building initiatives, and joint research to strengthen regional responses. The proceedings reaffirmed APEC's collective commitment to addressing non-communicable diseases (NCDs) through whole-of-government and whole-of-society approaches, ensuring alignment with global health priorities and reinforcing health as a driver of inclusive economic growth.

## **A. Day 1: Tuesday, 1 July 2025**

### **1. Opening Ceremony**

The Opening Ceremony of the APEC Diabetes Mellitus Workshop 2025 was held on the morning of 1st July 2025 at Manado Health Polytechnic, MoH Indonesia. The ceremony was attended by high-level officials from the Government of Indonesia, senior representatives of the APEC Health Working Group (HWG), delegates from 6 APEC member economies, international organizations, and academic and community partners.

The event commenced with a traditional North Sulawesi dance performance, which welcomed participants and symbolized the cultural richness of the host.

#### **1.1 Welcome remarks**

The Governor of North Sulawesi was delivered by the Acting Head of the North Sulawesi Provincial Health Office, who expressed gratitude to APEC and the Ministry of Health of Indonesia for choosing Manado as the host city. He emphasized that North Sulawesi, with its rich cultural traditions and diverse communities, represents the spirit of inclusiveness and collaboration needed to address T2DM. The Governor underscored the importance of community engagement, pointing to the success of local programs that combine health promotion with traditional and faith-based approaches.

#### **1.2 Report by Host**

The Director General for Health Workforce, Ministry of Health of Indonesia, represented by Secretary of the Directorate General of Health Workforce, then addressed the participants. She highlighted the critical role of human resources for health in implementing interprofessional collaboration (IPC). Stressing that diabetes management is not solely the responsibility of physicians, she argued for the necessity of involving nurses, nutritionists, pharmacists, community health workers, and even local leaders.

### 1.3 Remarks

On behalf of APEC, the Vice-Chair of the APEC Health Working Group congratulated the host economy for convening a timely and relevant workshop. He emphasized that diabetes and other non-communicable diseases (NCDs) are now among the most pressing challenges for APEC economies, not only as health issues but also as economic threats. He reminded participants that health is a critical enabler of trade and growth, noting that loss of productivity due to chronic diseases can undermine regional prosperity. The Vice-Chair further stressed that the HWG has consistently promoted whole-of-government and whole-of-society approaches, and this workshop is an important step toward operationalizing such principles.

### 1.4 Keynote Speech

The Keynote Speech by the Minister of Health of Indonesia was delivered by the Director for Noncommunicable Diseases. In her speech, the Minister outlined Indonesia's strategies to combat diabetes, framed under three major pillars:

- 1) Promotion and prevention: Scaling up awareness campaigns, encouraging physical activity, and promoting healthier diets.
- 2) Early detection and screening: Strengthening community-level health posts (posbindu) and integrating routine checks into primary care.
- 3) Strengthening primary healthcare and interprofessional teamwork: Building IPC frameworks that empower local clinics to deliver patient-centered and continuous care.

The Minister underlined that T2DM is no longer an individual lifestyle problem but a societal challenge requiring coordinated responses. She pointed out that APEC provides a unique platform to learn from other economies and adapt innovations across contexts. She concluded with a strong call for solidarity; to commit, as APEC economies, to ensuring that no community, however remote, is left behind in the fight against diabetes.

### 1.5 Opening Remarks

The Director for Health Workforce Provision, on behalf of the Minister of Health, expresses appreciation for the presence of delegates from APEC member economies, international partners, and Indonesian stakeholders from various health institutions. She emphasized that the workshop marked a significant step in advancing APEC's shared health agenda, particularly in addressing the complex and growing burden of T2DM. Participants were encouraged to contribute actively, share experiences candidly, and engage constructively in the plenary sessions and group exercises.

The Opening Ceremony concluded with an official declaration and the Tetengkoren ritual, a traditional drumming practice unique to the region. The act of jointly striking the Tetengkoren was described as a symbolic gesture of unity, harmony, and collective responsibility. It embodied the workshop's central theme of collaboration across professions, sectors, and economies to address the burden of Type 2 Diabetes Mellitus (T2DM). Delegates responded warmly to this cultural expression, noting its resonance with the APEC vision of shared growth and health security. The atmosphere was one of optimism, cultural appreciation, and collective determination, marking the start of the two-day proceedings.

## **2. Plenary and panel sharing sessions 1**

### **2.1 Plenary Session 1**

Topic: Challenges of DM Type 2 Control in the Community and How to Manage It

Moderator: Anna Kurniati, SKM, MA, PhD., Director for Health Workforce Provision, Ministry of Health, Indonesia

#### **2.1.1 Subject 1 Dr. Aqsha Azhary Nur – WHO Global Diabetes Compact**

Presentation Title: Global Data Updates and Challenges: Epidemiology, Burden, and Economic Impact of the T2DM Disease

Outline Covered:

- a. Global Burden of Diabetes
- b. Global Inequalities in Diabetes Care
- c. Global Commitment
- d. Progress and Achievements
- e. Global Burden of Diabetes

Dr. Aqsha began by addressing the global scale of the type 2 diabetes (T2DM) epidemic. Over the past 30 years, the prevalence of diabetes has quadrupled, affecting approximately 800 million people worldwide, with more than 90% of cases classified as type 2 diabetes. APEC member economies, in particular, have experienced a significant rise in prevalence since 1990, signaling an urgent public health crisis. He also emphasized the immense economic burden caused by diabetes. Global health expenditure for the disease has reached approximately USD700 billion annually, with the United States alone accounting for more than USD400 billion.

The presentation highlighted severe disparities in diabetes care globally. Over 50% of individuals with diabetes are not receiving appropriate treatment, especially in low- and middle-income economies where healthcare infrastructure is limited. Treatment coverage across APEC economies varies widely—from as low as 22% to a maximum of 65%—illustrating deep inequities in access to care. In addition, while glucose meters are generally available, access to HbA1C testing for long-term blood sugar monitoring remains insufficient in many regions. The availability of insulin and other essential diabetes medications is also inconsistent, particularly in Southeast Asia. Social stigma associated with diabetes continues to negatively affect the lives and opportunities of people living with the disease. He also noted that approximately 40% of diabetes cases remain undiagnosed, and among those diagnosed, only 30% achieve recommended treatment goals—revealing significant gaps in disease management.

Dr. Aqsha outlined the key commitments of the international community, particularly as outlined in the 2021 World Health Assembly resolution. This resolution set the stage for stronger global action and introduced five ambitious targets to be achieved by 2030. Central to this commitment is the launch of the WHO Global Diabetes Compact, which serves as a coordinated framework to guide economies in improving diabetes prevention, diagnosis, treatment, and long-term care. The Compact promotes collaboration across sectors and emphasizes the role of economy engagement in driving progress.

Several advancements were shared during the presentation. These include the improved inclusion of diabetes treatments in economy's essential medicines lists and the development of technical guidance, especially aimed at strengthening diabetes care at the primary healthcare level. Prevention efforts are also being scaled up through initiatives like the WHO NCD Best Buys, which offer cost-effective interventions for managing non-communicable disease risk factors. Many APEC economies are actively participating in this program, particularly in response to rising obesity rates.

Dr. Aqsha concluded his presentation by introducing the Global Diabetes Research Agenda, which sets clear research

priorities and promotes a collaborative governance model that includes governments, academic institutions, healthcare professionals, and people living with diabetes. He closed by proposing five strategic recommendations to advance global diabetes programs:

- 1) Strengthen domestic policies,
- 2) Integrate diabetes services into broader healthcare systems,
- 3) Ensure equitable access to essential medicines and diagnostics,
- 4) Enhance cross-sector collaboration, and
- 5) Remain focused on achieving the global 2030 targets through sustained commitment and innovation.

#### **2.1.2 Subject 2 Prof. Dr. dr. Em Yunir, Sp. PD, K-EMD – Head of Endocrinology Society of Indonesia**

Presentation Title: Managing T2DM in the Community, a healthy diet, physical activity, education and medication

Outline Covered:

- a. T2DM in Indonesia
- b. Diagnosis of T2DM
- c. Management of T2DM
- d. Personalized Care Plans
- e. Interprofessional Collaboration

Type 2 Diabetes Mellitus (T2DM) remains a significant public health concern in Indonesia, which is the fifth economy with DM. The current prevalence is 11.7%, with approximately 9.5% of cases remaining undiagnosed and untreated. This data highlights a substantial hidden burden and underlines the urgent need for improved early detection and public awareness strategies to manage the disease effectively.

Diagnosing criteria at the PKM based on POC capillary blood glucose. Chronic complication of Diabetes in Asian economy: 57% microvascular complication, 43% macrovascular complication, maybe not difference with other economy. Early diagnosis is essential to allow timely intervention, reduce complications, and improve long-term outcomes.

Comprehensive management of T2DM involves five key components: patient education, dietary therapy, physical activity, pharmacological treatment, and continuous

monitoring and evaluation. Patient education is essential to enhance awareness, promote self-care, and support early prevention of complications. Variance diets for lowering blood sugar in T2DM can reduce A1c. Glycemic improvement was associated with weight loss but not recommended for long duration. Physical activity is recommended at a frequency of 3–5 times per week, with each session lasting 30–45 minutes, totaling at least 150 minutes per week. Additionally, medication adherence plays a critical role in achieving glycemic control, with fixed-dose combination therapies offering a practical solution to improve compliance.

Developing individualized care plans is vital for the successful management of T2DM. It includes glycemic targets, therapy selection, nutrition, physical activity, and phsyscosocial support. Various dietary approaches have shown effectiveness in lowering HbA1c levels. However, glycemic improvement is more closely associated with weight loss rather than the specific type of diet. Long-term adherence to restrictive diets is generally not recommended, emphasizing the need for personalized, sustainable dietary strategies tailored to each patient's needs, preferences, and lifestyle.

Improving diabetes outcomes in the community setting requires strong interprofessional collaboration, family involvement, and accessible healthcare services. Existing barriers in T2DM management highlight the need for cross-sectoral teamwork to ensure that interventions are effective, sustainable, and culturally appropriate.

### **2.1.3 Subject 3 dr. Ida Ayu Made Kshanti, Sp.PD.KEMD – Diabetes Educators Association of Indonesia**

Presentation Title: T2DM Patient Compliance with Management (Diet, Physical Activity, And Medication) in The Community: Educators' Perspective

dr. Ida Ayu Made Kshanti delivered a comprehensive presentation from the perspective of diabetes educators, emphasizing the critical role of education, support, and community involvement in improving patient compliance in managing type 2 diabetes mellitus (T2DM). She introduced the Indonesian Diabetes Educator Association (IDEA) as a non-profit organization committed to building healthcare

professionals' capacity to deliver Diabetes Self-Management Education and Support (DSMES). IDEA also plays a strategic role in supporting entrepreneurs and decision-makers to expand access to diabetes education and care across Indonesia.

She explained that effective management of T2DM requires a multi-faceted approach including education, physical activity, nutrition, oral or injectable medications, and regular monitoring (SMBG). However, these components are often met with multiple challenges, particularly in real-world, non-clinical settings.

She elaborated on DSMES as a structured and evidence-based program that empowers people with diabetes to make informed decisions, adopt healthy behaviors, and manage their condition confidently on a day-to-day basis. The program enables trained educators to provide practical lifestyle guidance beyond the clinical environment—reaching individuals and families at the community level.

Despite its proven benefits, DSMES faces several barriers, such as:

- 1) Low awareness among both patients and healthcare providers.
- 2) Logistical and infrastructural issues in rural and remote areas.
- 3) Sociocultural dynamics, where individuals may struggle to determine the type of support they expect from family members.
- 4) Time constraints due to modern, fast-paced lifestyles.
- 5) Broader systemic challenges, including limited policy support and competing public health priorities.

Dr. Kshanti emphasized the importance of community support, particularly through integrated health and community-based collaboration. These grassroots initiatives can lead to better outcomes and more sustainable diabetes care models. Regarding educational strategies, she recommended a combination of conventional face-to-face methods and technology-based tools, such as virtual learning platforms. This hybrid approach broadens reach and improves accessibility, especially during disruptions like the COVID-19 pandemic.

She concluded by highlighting the measurable improvements seen in individuals who participate in DSMES programs. These include better glycemic control, increased self-management capabilities, enhanced motivation and confidence, reduced healthcare costs, and more consistent follow-up and long-term support.

#### **2.1.4 Discussion**

Question from: Yoanita (Prof. RD. Kandou Hospital)

Question Directed to: Dr. Aqsha Azhary Nur

Yoanita expressed her concern regarding the continued global rise in type 2 diabetes cases, referencing 2025 projections from the International Diabetes Federation (IDF), that show a steady and significant increase despite advancements in prevention and management strategies. She cited cost analysis data from the JIKA M database (2016), published by Hidayat et al. in 2022, which involved over 800 patients with type 2 diabetes. The study showed that 57% of these patients experienced complications, and 74% of the total medical costs (exceeding USD500 million) were attributed to those complications. She highlighted a paradox: although understanding of diabetes and lifestyle-related diseases has improved and cross-sectoral programs have been widely implemented, outcomes remain below expectations.

Yoanita asked a series of critical questions:

- 1) What is the real root of the problem?
- 2) Why are the results not aligned with the efforts and plans that have been established?
- 3) What realistic and impactful breakthroughs are needed to reverse this trend?

Response - Dr. Aqsha Azhary Nur:

Dr. Aqsha acknowledged the concern and explained that there are variations in diabetes prevalence between economies, indicating that some economies are making more progress than others. For example, Brunei Darussalam; Indonesia; and Malaysia, have seen 2.5 times increases in prevalence, while other APEC members show lower increases of 1.4 to 1.7 times, suggesting effective prevention programs in those areas.

He cited Singapore as a positive example, where diabetes prevalence rose only slightly—from 12.47% in 1990 to 13% in 2022. He attributed this to strong government-led, large-scale initiatives, such as the so-called “War Against Diabetes”, which mobilizes cross-sectoral efforts under direct governmental leadership. Dr. Aqsha emphasized that effective diabetes prevention is not solely the responsibility of secondary or tertiary healthcare, but must begin with policies that protect the healthy population. For instance, regulating access to sugary drinks, making healthy foods more affordable, and implementing practical education tools—such as in Thailand, where the Minister of Health personally promotes healthy rice consumption using a spoon as a visual aid in schools and rural areas.

He also highlighted the role of digital platforms like Gojek or Grab, where highly sugary drinks can be ordered with ease, often without clear calorie information. This accessibility contributes to unhealthy dietary patterns. Finally, Dr. Aqsha stressed the importance of continued global advocacy, mentioning the upcoming United Nations General Assembly, where high-level representatives will once again be urged to prioritize diabetes prevention. He acknowledged that policy change is a long-term process, similar to other major health challenges like HIV and TB, and reiterated the need for persistent efforts and political will to drive effective breakthroughs.

Question From : Dr. Asep Kuswandi

Dr. Asep Kuswandi raised four questions directed to various panelists:

- 1) To Dr. Aqsha: He noted that the global proportion of undiagnosed diabetes remains around 40%, a figure consistent since 2006. He asked what actions are being taken to achieve an 80% diagnosis rate by 2030.
- 2) To Dr. Aqsha: He inquired about the educational process and required competencies to become a podiatrist, especially since podiatrists were mentioned as important members in diabetes care teams.
- 3) To Dr. Em Yunir: He cited data indicating that approximately 80% of patients with diabetes fail to reach

therapeutic targets due to the side effects of oral antidiabetic agents such as metformin (e.g., nausea, vomiting, gastric discomfort). He asked what strategies are being used to overcome these side effects.

- 4) To Dr. Ida Ayu Made Kshanti: He observed that diabetes education is an important factor in glycemic control and asked whether there is a curriculum available for the general public and healthcare professionals. He also asked how one could become a diabetes educator in Indonesia.

**Response – Dr. dr. Em Yunir:**

Dr. Yunir addressed the issue of side effects from oral antidiabetic medications, particularly metformin. He clarified that in primary care settings; the therapeutic options are limited—typically only metformin and sulfonylureas are available. If a patient experiences intolerable side effects such as nausea or gastrointestinal issues, the physician should stop metformin. However, because alternative medications are not widely accessible in primary care, such patients must be referred to secondary or tertiary hospitals.

These hospitals, staffed by internists or endocrinologists, have access to a broader range of antidiabetic agents and are better equipped to tailor pharmacological treatment plans for individual patients. Dr. Yunir highlighted the importance of referral pathways to ensure optimal treatment and avoid therapeutic failure in primary care.

**Response – Dr. Kshanti:**

Dr. Ida Ayu Kshanti responded to the question regarding diabetes educator training in Indonesia. She explained that, unlike in other economies where there are structured degree programs and certification exams every few years to maintain competence, Indonesia currently does not have a formal degree program for diabetes educators. However, Indonesia offers in house training programs lasting approximately three days. These are based on a curriculum already approved and launched within the economy system. Institutions that meet the requirements can independently conduct these trainings. Additionally, the Indonesian Diabetes Association (PERSADIA) organizes training programs twice a year. Dr. Ida emphasized that while the pathway is less formalized compared to other economies, efforts are underway to

standardize diabetes educator training, and more information is accessible through the association's official website.

Response – Dr. Aqsha:

Dr. Aqsha began by addressing the question about the global rate of undiagnosed diabetes, stating that while the undiagnosed proportion remains high globally, progress has been observed in many economies. He highlighted data from Indonesia's National Health Surveys (RISKESDAS) conducted in 2013, 2018, and 2023.

- 1) In 2013, only 18% of people with diabetes were diagnosed.
- 2) By 2018, that figure rose to 22%, and
- 3) In 2023, preliminary data show that 28% are now diagnosed.

This demonstrates encouraging progress, particularly with increased health screening and awareness campaigns. Dr. Aqsha emphasized the importance of sustaining and accelerating these efforts to reach the 2030 target. Regarding podiatrist training, he explained that Indonesia currently does not have a formal podiatry program. However, in economies where podiatry is well-established, there are Master's degree programs, apprenticeship opportunities, and professional registration systems to certify podiatrists. These professionals play a critical role not just in assessment and treatment, but also in educating patients and preventing limb complications. Dr. Aqsha suggested that Indonesia could benefit from developing a standardized and regulated pathway for podiatry training, inspired by global best practices, to address diabetic foot complications effectively.

## **2.2 Panel Sharing Session 1**

### **2.2.1 Economy Representative: People's Republic of China – Mrs. Chun CAI**

Presentation Title: Challenges in the Management of Type 2 Diabetes in the Community

The representative from People's Republic of China presented an in-depth overview of the economy efforts and ongoing challenges in managing type 2 diabetes within community settings, emphasizing the economy's substantial disease burden and multi-level policy responses. People's

Republic of China currently faces a rapidly rising prevalence of diabetes, with over 140 million individuals affected. Key complications such as diabetic retinopathy (16.3%) and chronic kidney disease (CKD at 32.7%) are of particular concern, with rural and southern regions showing disproportionately higher CKD rates. Several key challenges in community-level diabetes management were identified:

- a. Persistent and increasing risk factors, particularly overweight and obesity, which affect over 50% of the population.
- b. Limited capacity of primary healthcare systems, requiring enhancement in workforce and service delivery.
- c. Low public awareness and knowledge about diabetes and its management.

To address these issues, People's Republic of China has implemented significant strategies, including:

- a. Basic Public Health Services for Diabetes (BPHS):
  - 1) Funded through per capita allocations (currently RMB 99 per person) directed to community and county health centers.
  - 2) General practitioners and their teams provide quarterly follow-ups, blood glucose monitoring, and health education.
  - 3) The program includes technical support, economy guidelines, and public health campaigns.
  - 4) Over 40 million patients are currently managed through this system, with standardized management rates exceeding 75%.
- b. Healthy People's Republic of China Initiative (since 2019):
  - 1) Aims to shift economy focus from treatment to prevention.
  - 2) Diabetes is one of 15 major health initiatives with set targets for awareness, management, treatment, and control.
  - 3) A three-year economy weight management campaign was launched in collaboration with 16 government departments to promote healthy lifestyles and reduce obesity.
- c. Access and Affordability:
  - 1) The essential drug system ensures the availability of diabetes medications even in rural areas.

- 2) Enhanced medical insurance coverage supports treatment at the primary care level with higher reimbursement rates compared to hospitals.
- 3) Promotion of family doctor contracts involving multidisciplinary teams, including public health nurses.
- d. Scientific and Technological Support:
  - 1) AI is used for early screening and prediction of diabetic retinopathy progression.
  - 2) Digital platforms enable comprehensive patient management, teleconsultations, and data integration at the community level (e.g., Shanghai's system manages over 760,000 patients).
  - 3) Mobile health (mHealth) technologies are deployed for insulin users to improve treatment accuracy.
  - 4) AI-powered personalized education (e.g., "patient portraits") has shown significant reductions in HbA1c levels within 12 weeks of intervention.

The presentation concluded by highlighting the integration of IT, AI, and economy policy as essential components in tackling the diabetes epidemic, particularly in improving community-level capacity, data-driven care, and personalized patient support.

### **2.2.2 Economy Representative: Indonesia – Ns. Aswardi, S.Kep., M.Kep**

Presentation Title: Challenges in the management of Type 2 Diabetes in the Community

#### **a. Introduction and Diabetes Prevalence in Indonesia**

Ns. Aswardi opened the session by presenting the status-quo of diabetes in Indonesia. As of 2025, Indonesia ranks 5th globally with approximately 20 million people living with diabetes. This number is projected to increase to 28.6 million by 2050. Despite the high prevalence, only about 25% of individuals diagnosed with diabetes are aware of their condition, and similarly, only 25% of people with diabetes receive management at health facilities.

#### **b. Strategy for Diabetes Control in the Community**

Indonesia's diabetes control program is structured around several pillars as regulated by the Ministry of Health Regulation No. 71 of 2015 on the management of non-communicable diseases (NCDs). These pillars include:

- 1) Health Promotion: Focused on behavioral change and community empowerment through education and coercive efforts. Health promotion activities mainly take place at the community level.
- 2) Early Detection: Identification and intervention of risk factors using appropriate methods based on available resources, primarily conducted at primary healthcare centers.
- 3) Case Handling: Ensures access and quality of care through a system of referral and guardianship, with case management often taking place at hospitals.

c. Community-Based Programs: Posyandu and Posbindu

Posbindu PTM (Integrated Development Post for Non-Communicable Diseases): Introduced in 2011, currently implemented in 514 cities and districts with over 3 million cadres involved. Since 2024, Posbindu has been transformed into Posyandu Posbindu to further integrate community efforts. The objectives of Posbindu include early detection of risk factors (such as obesity, smoking, and inactivity), regular monitoring of individuals with NCDs including diabetes, health education and promotion, and facilitating referrals for diagnosis and treatment. These community volunteers, supervised by district health offices and the Ministry of Health, conduct activities at village health posts and through home visits. Funding comes from various sources, including economy-wide, provincial, and district budgets.

d. Services and Procedures at Posbindu

Posbindu cadres perform five key steps in screening and monitoring diabetes patients:

- 1) Registration of the patient
- 2) Measurement of weight, height, waist circumference, and blood pressure
- 3) Recording and explaining measurement results to patients
- 4) Blood sugar monitoring and risk assessment by healthcare professionals
- 5) Provision of health education tailored to individual patient needs

Additionally, cadres conduct home visits to assess patient compliance and ensure access to necessary services. They also provide education, counseling, and continuous monitoring, reporting back to primary healthcare centers.

e. Data Recording and Reporting

Data collection and reporting are facilitated through the ASIK (Integrated Health Service Information System). However, as of 2025, only 4% of the population has undergone early diabetes detection, with 5% identified as having hyperglycemia. Among these, only 0.33% have adequate blood glucose control.

f. Challenges in Community-Based Diabetes Management

Several challenges were highlighted:

- 1) Lack of knowledge and awareness among the community, influenced by social and cultural norms
- 2) Difficulty conducting activities during working hours
- 3) Limited number and capacity of cadres available to support diabetes management
- 4) Challenges in accurate and consistent recording and reporting of patient data

The panel discussion emphasized the need to strengthen community-based efforts in diabetes management, improve education and awareness, expand cadre training and capacity, and enhance data management systems to improve early detection and treatment outcomes for people living with diabetes in Indonesia.

### 2.2.3 Discussion

#### Question 1: Dr. Zulfiayu (Poltekkes Gorontalo, Indonesia)

Dr. Zulfiayu directed her question to Mrs. Chun Cai (Speaker from People's Republic of China), acknowledging People's Republic of China's leadership in diabetes management and its integration of Traditional Chinese Medicine (TCM) for prevention and treatment. She asked how TCM is utilized in Type 2 Diabetes (T2DM) care. She also posed a question to Mr. Aswadi (Indonesia), referencing the existence of programs like "One Nurse One Village" and "Dana Desa." She inquired how these community-based

resources could be better leveraged to empower diabetes prevention and control at the grassroots level.

### **Question 2: Prof. Ferry Effendy**

Prof. Ferry addressed three key questions to the Chinese delegation:

- a. Patient Engagement with Mobile Health Courses: How does People's Republic of China ensure sustained patient compliance after participating in mobile health interventions?
- b. AI Integration: To what extent do clinicians rely on AI? Are there established standards or protocols for AI-human collaboration in hospitals or primary care?
- c. Transferability: What are the prerequisites for transferring People's Republic of China's AI and mobile health strategies to low- and middle-income economies?

### **Response: Chun Cai (People's Republic of China)**

Mrs. Chun explained that in rural areas, older adults often prefer visiting general practitioners (GPs) over using mobile health apps. In response, People's Republic of China is developing simplified apps and community-based service systems. Government mandates require four follow-up visits annually for diabetes patients, even in rural areas. Funding is directly allocated to Community Health Centers (CHCs), and in some rural settings, implementation is more effective than in urban areas. Regarding AI and clinical collaboration, People's Republic of China has disease-specific information systems at tertiary hospitals. These systems support research and clinical decision-making, and data is also used to generate surveillance reports for district-level health authorities.

### **Response: Mr. Aswadi (Indonesia)**

Mr. Aswadi emphasized the role of interprofessional collaboration. The presence of both nurses and nutritionists in villages presents a valuable resource. Nurses can assist in early detection and ongoing monitoring, integrating diabetes care into the primary healthcare system effectively.

### **Follow-up Question: Prof. Ferry Effendy**

Prof. Ferry reiterated his interest in standards for AI-human collaboration. He asked whether People's Republic of

China has developed any best practices to determine when clinicians should rely on AI versus clinical judgment.

**Further Response: Chun Cai**

Ms. Chun reiterated that People's Republic of China is developing specific clinical information systems to support doctors, especially in tertiary hospitals. Physicians can retrieve eligible patient data for research, and AI systems assist with diagnosis and treatment. Information is integrated across hospitals and district health systems, allowing for comprehensive surveillance.

**Comment: Dr. Aqsha Azhary Nur (WHO Representative)**

Dr. Aqsha responded by highlighting the WHO Ethics and Governance Framework on AI in Health. He noted that while AI tools are increasingly accessible, frameworks are needed to ensure safe and accurate use—especially in clinical settings. He emphasized that many AI models are trained on data from high-income economies, which may introduce biases when applied in different contexts. Nevertheless, he stressed AI's growing role in diabetes care (e.g., for diabetic retinopathy), and encouraged global collaboration and knowledge-sharing.

**Question: Participant from Indonesia**

A participant asked Mrs. Chun Cai about financial support from the Chinese government, especially for diabetes education and prevention at the primary care level. She expressed concern that such support remains limited in Indonesia.

**Response: Chun Cai**

Ms. Chun responded that while People's Republic of China's economy is still developing, public health funding is increasing. Each year, People's Republic of China adds RMB 5 per capita to the community health budget. Medication costs have been reduced by 70% due to centralized procurement. This financial strategy allows more funds to be allocated toward prevention programs, including education and physical activity. People's Republic of China's diabetes management program, which has been running for 15 years, has enabled the economy to manage over 40 million patients, each with a personal health record.

### **3. Plenary and panel sharing sessions 2**

#### **3.1 Plenary Session 2**

##### **Topic: IPC Approach to Deal with DM Type 2 in the Community**

Moderator: dr. Esti Widiastuti Mangunadikusumo, M. Sc.PH – Chair of the Metabolic Disorders Working Team, Ministry of Health Indonesia

##### **3.1.1 Subject 1 Dr. Amit Gupta, DNB, M.Sc., FACE, FRCP, FACP – Chair of the IDF School of Diabetes and Chair - Elect of the American Diabetes Association's (ADA) Public Health and Epidemiology Interest Group**

Presentation Title: Defining roles in an IPC team for DM type 2 management

Dr. Amit Gupta presented a structured overview on the essential role of Interprofessional Collaborative (IPC) teams in the effective management of Type 2 Diabetes Mellitus (T2DM). He emphasized that IPC teams—comprising diverse healthcare professionals—serve to provide comprehensive, coordinated, and patient-centered care, ensuring that all aspects of a patient's needs are addressed in an integrated manner. The IPC team for T2DM may include a broad range of professionals: physicians (such as endocrinologists and primary care providers), nurses, registered dietitians, certified diabetes educators, pharmacists, psychologists or mental health professionals, exercise physiologists, social workers, and other relevant specialists depending on the patient's condition.

Dr. Gupta highlighted the benefits of a team-based approach, which include:

- a. Addressing both medical and psychological needs
- b. Supporting necessary lifestyle modifications
- c. Delivering holistic and personalized care
- d. Enhancing communication and coordination among providers
- e. Improving overall patient outcomes

For IPC teams to function effectively, Dr. Gupta stressed the importance of:

- a. Shared decision-making
- b. Regular communication among team members
- c. Mutual respect and trust

- d. Clearly defined roles and responsibilities to prevent duplication and gaps in care

He also outlined potential disadvantages of failing to define roles within IPC teams, such as misunderstandings, conflict, inefficient resource use, and patient dissatisfaction. To ensure alignment toward patient-centered goals, IPC teams are encouraged to:

- a. Use shared information systems
- b. Conduct regular team meetings
- c. Promote cross-referrals and consultations
- d. Deliver unified messaging to patients
- e. Maintain the patient as the central figure in care planning and implementation

In conclusion, Dr. Gupta emphasized that the success of T2DM management through IPC lies in role clarity, collaborative planning, and an unwavering focus on the patient's comprehensive well-being. This collaborative model not only improves clinical outcomes but also strengthens healthcare delivery by fostering synergy among professionals involved in diabetes care.

### **3.1.2 Subject 2 Prof. Ferry Efendi, S.Kep, Ns, M.Sc., PhD – Professor of Community Nursing from Airlangga University, Indonesia**

Presentation Title: Patient – Centered Care Through IPC: Involving the Patient in the Care Team

Prof. Ferry Efendi delivered a compelling presentation on the integration of Patient-Centered Care (PCC) within the framework of Interprofessional Collaboration (IPC), emphasizing that involving patients as active members of the care team is essential for achieving better health outcomes and more meaningful healthcare delivery. He explained that IPC provides the necessary team structure, communication channels, and organizational culture to enable consistent and practical implementation of PCC principles in daily clinical settings. IPC encourages various healthcare professionals to collaborate across disciplines while placing the patient at the center of care planning and decision-making.

Patient-Centered Care (PCC) is a healthcare approach that:

- a. Prioritizes individual patient needs, preferences, and values
- b. Empowers patients to be active participants in their healthcare journey
- c. Promotes personalized, meaningful care

Prof. Ferry outlined the benefits of PCC, which include:

- a. Improved health outcomes
- b. Enhanced patient satisfaction
- c. Strengthened communication between patients and providers
- d. Reduced healthcare costs
- e. Improved safety and quality of care

The synergy between IPC and PCC was highlighted through:

- a. Delivery of holistic patient care
- b. Shared decision-making
- c. Development of individualized, patient-centered care plans

To enhance communication between the IPC team and patients, Prof. Ferry emphasized several key strategies:

- a. Building trust and rapport
- b. Using clear and accessible language
- c. Encouraging patient feedback
- d. Being culturally sensitive and respectful

When effectively integrated, PCC within IPC models results in:

- a. Stronger patient-provider relationships
- b. More coordinated and responsive care
- c. Greater patient engagement and satisfaction

Prof. Ferry concluded that the integration of IPC and PCC fosters a more compassionate, effective, and patient-aligned healthcare system. By engaging patients not just as recipients but as integral partners, care delivery becomes more responsive to individual needs and ultimately leads to better outcomes.

### **3.1.3 Subject 3 Karmila Munadi – Indonesia Diabetes Association (IDA)**

Presentation Title: Perspective of people with Diabetes and community approach in DM type 2 management

In this session, Karmila Munadi shared a personal and community-centered perspective on living with Type 2 Diabetes Mellitus (T2DM), highlighting the emotional journey of individuals diagnosed with diabetes and the transformative impact of community support. She began by describing the psychosocial struggles many patients experience following diagnosis feelings of hopelessness, fear of the future, social withdrawal, and depression. These emotional burdens often stem from a perception of being a burden to others and a lack of direction on how to manage the disease.

The turning point for many individuals occurs when they decide to continue living fully. This shift often involves actively learning about diabetes and connecting with others who share similar experiences. The speaker underscored the significant role of Persadia, the Indonesian Diabetes Association, as a community where people with diabetes can share stories, exchange knowledge, and receive emotional support.

Participation in such communities has been shown to:

- a. Reduce diabetes-related burnout
- b. Improve motivation and self-efficacy
- c. Enhance emotional well-being and clinical outcomes

Karmila also emphasized the value of community-based health services such as Posyandu and Posbindu. These programs:

- a. Provide ongoing education and support for people with diabetes
- b. Help debunk myths and reduce stigma in the community
- c. Serve as local platforms to educate both diabetics and non-diabetics
- d. Encourage prevention efforts and early detection of risk factors

The presentation concluded with a powerful message: Diabetes is manageable when people are supported not only medically, but also emotionally and socially. Through community connection and shared empowerment, individuals living with T2DM can improve their quality of life, while communities can become key drivers in shifting perceptions and improving public health outcomes.

### **3.2 Panel Sharing Session 2**

#### **3.2.1 Dr. Sia Ai Tee – Brunei Darussalam Representative**

Presentation Title: IPC Approach to Deal with DM Type 2 in the Community

The session was opened by Dr. Sia Ai Tee, a general practitioner from Brunei Darussalam, who shared practical insights into how Type 2 Diabetes Mellitus (T2DM) is managed at the community level through a multidisciplinary and interprofessional approach. Her presentation centered on Brunei Darussalam's healthcare system, the structure of primary care, and the integration of digital health technologies to improve patient management and engagement. Dr. Sia began by describing Brunei Darussalam's healthcare context, where citizens and permanent residents receive free government-funded healthcare. This model shapes patient behavior, with most people seeking treatment for chronic conditions, including diabetes, at government facilities. Private clinics are typically used only for acute, minor illnesses due to high out-of-pocket costs. She noted that expatriate workers currently pay for their own healthcare unless employed in the government sector, although a compulsory health insurance scheme for foreign workers was being implemented shortly.

In line with WHO recommendations, Brunei Darussalam has invested in strengthening primary healthcare over the past 25 years. Dr. Sia highlighted the decentralization of services from hospitals to the community starting in 2000, improving accessibility and patient-centered care. Training for general practitioners has also been a priority, with 19 cohorts having undergone specialized education to build capacity for managing non-communicable diseases (NCDs) like diabetes. Dr. Sia described the “one-stop health center” model, which offers a comprehensive range of services including maternal and child health, pharmacy services, chronic disease clinics, and diabetes care. However, the system still relies on walk-in appointments, creating a high patient load and limiting the time physicians can spend on chronic disease management. To address this, Brunei Darussalam introduced the concept of General Practitioners with Special Interest (GPwSI), with some GPs receiving advanced training in diabetes care in the UK. This initiative has improved the quality of diabetes services in primary care. A vital role is also played by Diabetic

Nurse Educators (DNEs), who not only provide education but also conduct annual foot screenings and offer ongoing patient support. Continuity of care is stronger at this level, as DNEs tend to remain stationed at the same facility.

Dietitians and pharmacists are embedded in many health centers, though availability varies by center size. Specialist services, such as ophthalmology for retinopathy screening and podiatry, are available on a visiting basis. Integration with secondary and tertiary care is facilitated by a collaborative network, with direct referral pathways in place between diabetes educators and specialists such as endocrinologists, podiatrists, and obstetricians for high-risk or pregnant patients. Dr. Sia acknowledged key challenges, such as the absence of in-house psychologists or exercise therapists, the lack of group counseling or patient support groups, and the fragmented communication between health professionals due to separate clinic systems. Nonetheless, monthly meetings between DNEs and GP specialists help improve coordination for complex cases.

Digital health technology is a key pillar in Brunei Darussalam's diabetes care. The Bru-HIMS (Brunei Darussalam Health Information Management System) ensures that every patient has a single health record accessible across all Ministry of Health services. Integration with labs, imaging systems, and private hospitals has streamlined diagnostics and continuity of care. Patients also receive SMS reminders for appointments. In terms of patient empowerment, Dr. Sia showcased the BruHealth App, a digital platform initially developed during COVID-19 that has since evolved into a comprehensive health management tool. Features include access to medical history, lab results, vaccination records, appointment booking, medication reminders, and personalized health indices. The app also allows family members to manage healthcare for elderly relatives and includes motivational programs like step challenges with reward incentives. However, she acknowledged limitations in reaching older populations due to digital literacy barriers.

Brunei Darussalam has also piloted the Balance Program, a 16-week mobile-based self-management initiative for T2DM patients. This includes glucose, nutrition, and physical activity

tracking, with a health coach overseeing progress and escalating care when needed. The program includes alerts for hypoglycemia and links to dietitians and doctors. The Ministry of Health in Brunei Darussalam works closely with the Health Promotion Centre and public health officials to implement the Multisectoral Action Plan for NCDs 2021–2025. This plan targets shared risk factors for cardiovascular disease, cancer, and diabetes—namely smoking, poor nutrition, and physical inactivity. Dr. Sia highlighted the importance of inter-ministerial collaboration to create a more effective response to NCDs.

In her concluding remarks, Dr. Sia outlined several systemic challenges in delivering optimal diabetes care, including:

- a. Manpower shortages across all healthcare levels, affecting service expansion.
- b. Walk-in system constraints, leading to rushed consultations.
- c. Continuity of care gaps due to patients seeing different doctors.
- d. Space limitations, preventing the establishment of full-service diabetes clinics.
- e. Prescribing restrictions in primary care, particularly for newer medications.
- f. Lack of standardized IPC training, surveillance data, and economic impact studies.
- g. Low public engagement, particularly among patients and families.

She stressed that patient involvement remains the most significant barrier to achieving better outcomes in diabetes care. Despite efforts and technological advancements, a strong, consistent partnership with patients and their families is essential in the ongoing fight against NCDs.

### **3.2.2 Ekaterina Zaytseva – Rusian Federation Representative**

Presentation Title: IPC Approach to Deal with DM Type 2 in the Community

Mrs. Ekaterina Zaytseva began her presentation by acknowledging the increasing global burden of type 2 diabetes mellitus (T2DM), a trend reflected in The Russian Federation as well. At the start of the year, approximately 5.5

million individuals were registered with diabetes in Russia, with over 5 million having T2DM. However, she noted that actual prevalence is likely higher than official figures due to undiagnosed cases. To address this growing concern, The Russian Federation Ministry of Health launched an initiative known as the Federal Project: “Fighting Diabetes”. This government funded project aims to reduce the incidence of diabetes, prevent complications, and improve life expectancy for patients. As part of this initiative, a four-tier model of endocrinology service delivery was introduced, structured across different levels of healthcare institutions:

- a. First Level (Primary Care): Focuses on primary prevention and early detection of diabetes and prediabetes through general practitioners in outpatient polyclinics. Patients without complications are monitored regularly with standard screening.
- b. Second Level: Targets the prevention of complications and is implemented through intra-district endocrinological centers. Currently, 555 such centers have been established. These facilities utilize a multidisciplinary team approach involving radiologists, cardiologists, nephrologists, neurologists, surgeons, ophthalmologists, endocrinologists, diabetic foot specialists, diabetes educators, and telemedicine personnel.
- c. Third Level: Offers specialized diagnostic and treatment services through regional endocrinology centers, of which 91 are operational. Each center serves around 500,000 people and is equipped with advanced technologies including MRI, laser surgery, densitometry, and education departments.
- d. Fourth Level: Represented by the National Endocrinology Research Center, where Mrs. Zaytseva works. Celebrating its 100th anniversary, the center is recognized as a leading clinical and scientific institution in endocrinology.

She emphasized that interprofessional collaboration (IPC) is fully integrated into all clinical, educational, and research activities at her institution. One key division is the Diabetes Mellitus Institute, which handles diagnostics, patient education, and treatment of complex diabetes-related

conditions, including surgical interventions. Key institutional achievements include:

- a. Treatment of over 6,200 children with endocrine disorders annually.
- b. Education of 2,000 children and parents through diabetes school each year.
- c. Delivery of outpatient services to 150,000 patients annually.
- d. Conducting more than 700,000 clinical laboratory tests per year.

The center also engages in cutting-edge clinical research, applying the latest international advances in personalized and evidence-based endocrinology care. Services span across multiple specialties, including diabetology, pediatric endocrinology, neurosurgery, oncology, ophthalmology, urology, cardiology, and gynecology. Mrs. Zaytseva described how the center ensures rapid diagnostics (within 3–4 hours) and continuous care from childhood through older adulthood. Within the Diabetes Institute, there are specialized departments addressing:

- a. Diabetes education and insulin pump therapy
- b. Diabetic kidney disease and dialysis
- c. Diabetic foot care
- d. Diabetic retinopathy and ophthalmic surgery
- e. Cardiovascular surgery and endovascular intervention

These departments are operated by a multidisciplinary team including endocrinologists, podiatrists, orthopedic and vascular surgeons, nurses, and cell therapy experts. She shared that limb preservation was successful in 94% of diabetic foot cases, highlighting the impact of IPC. Furthermore, the center addresses rare and genetic forms of diabetes, such as MODY and gestational diabetes, using molecular diagnostics. Annually, the center performs:

- a. 397,000+ total consultations
- b. 20,000+ outpatient visits
- c. 2,000+ cardiovascular surgeries
- d. 800+ diabetic foot surgeries

Mrs. Zaytseva also stressed the role of outpatient care trios comprising diabetes education centers, ophthalmology clinics, and diabetic foot units as key elements for community-

based diabetes care. The center also contributes to medical education, training:

- a. 250 medical residents
- b. 40 PhD students
- c. 1,500+ trainees annually

In conclusion, she emphasized that interprofessional collaboration is vital for the prevention, early diagnosis, and effective management of type 2 diabetes and its complications. The Russian Federation model demonstrates that coordinated, multi-level, and multidisciplinary systems can significantly improve diabetes outcomes at an economy scale. She ended the session by extending her willingness to collaborate and support diabetes education globally.

### 3.3 Discussion

#### Question 1: Dr. Ida Ayu Kshanti (PEDI)

Dr. Kshanti asked Ekaterina Zaytseva (The Russian Federation Representatives) about the role of diabetes educators in The Russian Federation. She was particularly interested in whether diabetes educators are integrated into the economy diabetes management system at all levels of care, especially at the primary and secondary levels, not only in specialized or tertiary care settings.

#### Response – Ekaterina:

Ms. Ekaterina explained that under The Russian Federation's Federal Project on Fighting Diabetes, structured "Schools for Diabetes" are established across different levels of the healthcare system.

- a. These schools provide training for healthcare professionals, including doctors, who are educated to become trainers themselves.
- b. The trained professionals then deliver diabetes education and management support to patients, especially at the second and third levels of care.
- c. The education is delivered by both physicians and nurses, who are actively involved in empowering patients through self-management education.
- b. This reflects an integrated approach where trained professionals play a central role in the structured diabetes education system, although more emphasis was mentioned at the secondary and tertiary levels.

**Follow up Question – Dr. Ida Ayu Kshanti:**

Dr. Kshanti further asked for clarification on whether the diabetes educators being referred to are nurse educators or physicians.

**Follow up Response – Ms. Ekaterina Zaytseva:**

Ms. Ekaterina clarified that in Russia, both doctors and nurses are educated to become diabetes educators. The education and patient training responsibilities are carried out by both professions, ensuring a multidisciplinary approach to diabetes education and management.

**Question 2: Dr. Asep Kuswandi, S.Kep., Ns., M.Kep., Sp.KMB (Poltekkes Kemenkes Tasikmalaya)**

Dr. Asep Kuswandi expressed his appreciation for the presentations delivered and raised several questions directed to multiple speakers:

- a. To Prof. Ferry Efendi, he asked which setting community or hospital is most suitable for implementing interprofessional collaboration (IPC) and patient-oriented care.
- b. To Ms. Camila, he offered congratulations for finding a “light in the darkness” through inspirational initiatives and shared a hope that experiences like hers could be widely disseminated across APEC economies via social media to help combat the diabetes burden.
- c. To Dr. Sia Ai Tee and Ms. Ekaterina, he expressed interest in the role and job description of a podiatrist, noting that Indonesia currently does not have podiatrists, and suggested that Indonesia may consider adopting such a role. He asked how to become a podiatrist and what training is required in other economies.

**Response – Prof. Ferry Efendi (Indonesia):**

- a. Prof. Ferry explained that interprofessional collaboration (IPC) can be implemented in various healthcare settings, not only at the secondary and tertiary hospital levels, but also at the primary care and community levels.
- b. He emphasized that IPC in community and family-based settings has shown to be more efficient and sustainable, supported by evidence from systematic reviews and meta-analyses.
- c. According to recent data, including from WHO, many best practices of IPC are being successfully applied in primary and community care.
- d. He highlighted that fostering IPC at the primary level allows better stakeholder involvement and more impactful health promotion for conditions such as diabetes.

**Response – Ekaterina Zaytseva (The Russian Federation):**

- a. Ekaterina shared that since 2023, The Russian Federation Government has launched a federal project to fight diabetes, with full government funding.
- b. This project focuses on early detection and prevention of complications through regular medical checkups and screenings.
- c. As a result, Russia has seen: Improved early diagnosis of diabetes, Reduced incidence of complications, and Fewer major amputations.
- d. She emphasized that patients receive care without having to pay, demonstrating strong public health commitment and system integration.

**Response – Dr. Sia Ai Tee (Brunei Darussalam):**

- a. Dr. Sia clarified the role of podiatrists in Brunei Darussalam, stating that they are considered part of the allied health professions, alongside dietitians, physiotherapists, and occupational therapists.
- b. Although Brunei Darussalam is a small economy with good infrastructure, podiatrists are essential in managing complications of diabetes, especially diabetic foot cases, which constitute a major workload.
- c. Podiatrists in Brunei Darussalam do not only handle diabetic foot complications but address a broader spectrum of foot-related conditions.
- d. There are structured referral pathways, allowing for early appointments and timely management for patients with diabetic foot risks.

**Follow up question - Dr. Asep:**

Dr. Asep asked for further clarification regarding the educational pathway to become a podiatrist. Specifically, he wanted to know:

- a. If a student graduates from senior high school,
- b. How many years of education are required to become a qualified podiatrist?

**Follow up Response – Dr. Sia:**

- a. Dr. Sia explained that podiatrists undergo a university-level program, similar to the training of dietitians, physiotherapists, or occupational therapists.
- b. Students must enroll in a degree program in podiatry at a recognized university to be eligible to practice as a podiatrist.

- c. The program typically requires several years of study (commonly 3–4 years depending on the economy and curriculum).

#### **Follow up Question - Mrs Dwi**

Mrs. Dwi inquired about the salary structure for professionals involved in multidisciplinary teams. She asked whether salaries are standardized or if there are variations, especially regarding additional services provided by certain professions.

#### **Response - Dr. Sia**

Dr. Sia explained that the salary for each profession falls under the multidisciplinary framework and is regulated. There are specific regulations in place, either from professional organizations or relevant authorities, to ensure fairness. She emphasized that no one profession should receive a disproportionately higher salary or financial incentive for providing extra services compared to their nursing or allied health colleagues.

#### **Response to Dr. Asep - Karmila Munadi:**

Karmila appreciated the acknowledgment from Dr. Asep and shared an update on her ongoing efforts. She stated that her team is still in the process of building a strong community, particularly targeting patients in rural areas. The goal is to expand outreach, share knowledge, and establish collaborative networks to better manage and prevent diabetes at the community level.

#### **Question 3: Dr. Chun Cai (Representative from People's Republic of China)**

Dr. Chun Cai raised a question to Dr. Sia Ai Tee (Representative from Brunei Darussalam) about Brunei Darussalam's health information system, particularly the ability of patients to access their health archives via an app. She expressed that integrating such a system is challenging, referencing People's Republic of China's own efforts to make health records accessible online post-COVID-19. Key points she asked:

- a. Does the health archive include complete clinical records?
- b. Is the same information system used across primary, secondary, and tertiary healthcare levels in Brunei Darussalam?
- c. How is data integration achieved to allow patients to view their consolidated health records?

**Response - Dr. Sia Ai Tee:**

Dr. Sia explained that patients in Brunei Darussalam can access their health information through a mobile application, which displays:

- a. Past and upcoming appointments
- b. Laboratory results (numerical data only)
- c. Radiology test listings (with basic interpretation)
- d. Current medication list

Narrative clinical notes or detailed diagnoses are not shown for confidentiality; the system will only display simplified labels (e.g., "normal"). Any patient who registers on the app and maintains login credentials can access this information.

**Follow up question – Mrs. Chun Cai:**

Mrs. Chun Cai followed up with a question about whether the same health record standards and systems are used across different levels of clinical care in Brunei Darussalam specifically in primary, secondary, and tertiary health facilities. She was interested in how Brunei Darussalam ensures data standardization and integration to allow consolidated patient records across the health system.

**Response - Dr. Sia:**

- a. Dr. Sia clarified that yes, Brunei Darussalam uses a unified electronic health record (EHR) system across all levels of care.
- b. However, data consistency and completeness depend heavily on the healthcare providers entering the information.
- c. Despite the presence of guidelines for data entry, ensuring compliance remains a challenge, as not all doctors follow them rigorously.
- d. She noted, "You can have guidelines, you can say you must do this, but doctors will never do," pointing out a common obstacle in health system implementation—the human factor in data quality.

**Question 4: Dr. Aqsha Azhary Nur**

Dr. Aqsha raised two main questions to Dr. Sia Ai Tee (Representative from Brunei Darussalam) regarding Brunei Darussalam's BruHealth app:

- a. Does BruHealth support interprofessional collaboration? He inquired whether various healthcare providers (e.g., doctors, dietitians, other professionals) can access patient data and view each other's records through the app.
- b. Is patient data aggregated at the economy level? He asked whether Brunei Darussalam's health system is able to extract economy-level data on: the number of people diagnosed with

diabetes, the type of treatment and communication they received, their glycemic control status, and whether all of this can be retrieved from the app's backend.

**Response – Dr. Sia Ai Tee:**

Dr. Sia stated that from the backend system, the government can extract aggregated data, which supports analysis of diabetes diagnosis, treatment outcomes, and service utilization on an economy-level.

**Follow up Question – Dr. Aqsha:**

Dr. Aqsha asked further clarification on:

- a. Whether every interaction (such as a consultation with a dietitian or physician) is submitted into the electronic record, and whether other professionals can track this.
- b. Whether there is any monitoring system when patients show clinical records during visits.

**Response - Dr. Sia Ai Tee:**

She clarified that while the app indicates a patient attended a clinic session, it does not show clinical notes from other professionals. To view detailed assessments or recommendations (e.g., from a dietitian), providers must access the Electronic Medical Record (EMR) system.

**B. Day 2 – Wednesday, 2 July 2025**

**1. Plenary and panel sharing sessions 1**

**1.1 Plenary Session 1**

Topic: Small steps for IPC to deal with DM Type 2 in the Community  
Moderator: Syamsu Alam, SKM, M.Epid

**1.1.1 Subject 1 dr. Dwi Tyastuti, S.Ked., MPH, Ph.D – IPC Expert Team**

Presentation Title: Building a Strong IPC Framework for T2DM Management

Dr. Dwi Tyastuti opened her presentation by expressing gratitude to the APEC community and the organizing committee, particularly Poltekkes Kemenkes Manado, for the opportunity to share her experience in implementing interprofessional collaboration (IPC) for T2DM management. She began by highlighting lifestyle changes in the younger generation that are contributing to an increased risk of chronic diseases such as type 2 diabetes. Using the example of night street culinary events, where more than 90% of vendors sell

sweetened drinks and fast food, she noted that most consumers are aged 17–35. This shift in consumption behavior is already reflected in clinical practice, where complications of diabetes are now frequently seen in patients as young as 30–40 years, and even as young as 14 years in some cases.

Dr. Dwi shared her experience in community-based IPC implementation, which began in 2010 and was further strengthened starting in 2023. She emphasized that successful T2DM management requires collaboration not only among health professionals but also among policymakers and community organizations. She defined primary collaboration as direct interaction with patients (e.g., consultation in clinics) and secondary collaboration as partnerships with non-clinical stakeholders such as spiritual leaders or traditional healers, who play a significant role in shaping patients' decisions.

She explained that while IPC is often discussed as a straightforward concept, its actual implementation is complex. One of the main challenges is gaining buy in from physicians, especially when the benefits of IPC are not immediately tangible or tied to financial incentives. She emphasized that doctors are more receptive when IPC is shown to improve efficiency or reduce health costs. Dr. Dwi also discussed the fragmentation of the healthcare system, role confusion among professionals, and the persistent influence of social, cultural, and religious values on patients' adherence to medical treatment. Based on her research, religiosity has a strong influence on medication adherence. Patients often prioritize advice from family and community over professional medical advice, especially when traditional medicine is involved. She stressed the need for health professionals to respectfully engage with these beliefs, integrating traditional medicine where appropriate without compromising clinical standards.

A proposed IPC framework was presented, which includes:

- a. Foundational principles, such as patient centered care, shared decision making, and mutual respect.
- b. Core components, including a defined interprofessional team (e.g., doctors, nurses, pharmacists, dietitians), clear task sharing, and collaborative processes.

- c. Supportive infrastructure, such as clinical information systems and digital tools.
- d. Stages of collaboration, beginning with assessment, diagnosis, care planning, and patient self-management, and including mechanisms for both primary and secondary collaboration.

She also introduced a tiered referral model to optimize resource use in primary care settings, especially in under-resourced communities. Depending on the complexity of the case, patients may be managed within primary care or referred to hospitals for advanced care. In closing, Dr. Dwi highlighted the financial impact of IPC, particularly in hospital settings where delayed BPJS Kesehatan (Indonesia's National Health Insurance) claims are common. She proposed that a strong IPC model can streamline documentation and reduce claim delays, thus improving hospital financial sustainability.

**Key Takeaways:**

- a. IPC is essential for effective and sustainable T2DM management.
- b. Collaboration must extend beyond healthcare providers to include communities and cultural leaders.
- c. Implementation requires addressing systemic, cultural, and financial barriers.
- d. A structured framework with clearly defined roles and processes is critical for IPC success.
- e. IPC has the potential to reduce healthcare costs and improve patient outcomes when supported by adequate infrastructure and team coordination.

**1.1.2 Subject 2 Dr. Amit Gupta, DNB, M.Sc, FACE, FRCP, FACP – Chair of the IDF School of Diabetes and Chair Elect of the American Diabetes Association's (ADA) Public Health and Epidemiology Interest Group**

Presentation Title: Building Community and Policy Support for IPC Models

In his session, Dr. Amit Gupta emphasized the importance of building strong community and policy support systems to implement effective Interprofessional Collaboration (IPC) models in healthcare. Drawing from global experiences and referencing WHO guidelines, he

highlighted the critical role IPC plays in managing chronic conditions such as Type 2 Diabetes Mellitus (T2DM). Dr. Gupta began by clarifying a common misconception: that simply having various healthcare professionals in the same facility constitutes a collaborative team. In reality, IPC only exists when these professionals work in a structured, coordinated, and communicative manner, with clearly defined roles, shared goals, and equal engagement in patient care. True IPC requires the establishment of integrated care pathways and continuous interprofessional dialogue.

Referencing the WHO Framework for Action on Interprofessional Education and Collaborative Practice, Dr. Gupta described how fragmented healthcare systems could be transformed through three main steps: identifying local health needs, implementing interprofessional education (IPE), and fostering collaborative practice. He emphasized that IPE must be distinct from individual professional training and should teach healthcare workers how to function effectively in a team setting.

Key elements of interprofessional education, according to Dr. Gupta, include understanding the training needs of the existing and future healthcare workforce, securing institutional support, and developing a tailored curriculum. He also stressed that interprofessional education should be integrated into accreditation standards and formalized within economy's health education policies. Dr. Gupta cited this workshop itself as an example of effective IPE in action bringing together doctors, nurses, pharmacists, educators, and community health workers to learn collectively about IPC principles.

In discussing the practical implementation of IPC, Dr. Gupta outlined several critical requirements: the development of structured protocols, use of shared resources such as electronic health records, strong communication strategies, and accessible shared workspaces. He noted that effective IPC must also create environments that support patient-centered care where patients are seen as active participants and are not overwhelmed by conflicting guidance from multiple professionals. He provided international examples to underscore the importance of government and policy support, including a 2008 Canadian resolution that formally included IPC in its healthcare reform strategy. Dr. Gupta argued that

legislation and policy frameworks are essential to scaling IPC and sustaining its long-term impact.

Dr. Gupta also discussed the financial implications of IPC, noting that sustainable funding is often a major challenge. He encouraged governments, private institutions, and even insurance providers to collaborate and invest in IPC as a long-term strategy to reduce costs and improve outcomes. He further stressed the need for continuous professional development and lifelong learning opportunities to help health workers maintain and enhance collaborative skills throughout their careers. The role of global health organizations was also explored. Dr. Gupta called on institutions such as the WHO, IDF, and others to support governments by promoting IPC as a global health priority, advocating for integrated educational programs, funding collaborative projects, and facilitating cross sector partnerships.

In closing, Dr. Gupta reiterated that although IPC implementation may be complex, it is essential for modern healthcare. Effective IPC not only improves patient outcomes but also enhances job satisfaction among health professionals, increases care efficiency, and strengthens health systems. He encouraged ongoing dialogue, collaboration, and shared learning as key steps toward mainstreaming IPC across all levels of health service delivery.

## 1.2 Panel Sharing Session 1

### 1.2.1 Economy Representative: Thailand - dr. Akapol Phisarn

Presentation Title: Small Steps for IPC to deal With DM Type 2 in the Community

dr. Akapol Phisarn opened his presentation with gratitude and introduced himself as a GP and Director of Ban Ta Khun Hospital, one of 20 government community hospitals in Surattani, a major province in southern Thailand with over 1 million people and more than 60,000 diabetes patients. His hospital alone provides care for over 800 patients with diabetes. He emphasized that diabetes remission is now achievable, especially with weight loss and healthy lifestyle interventions. To address this, the hospital has implemented a Remission Clinic, integrated into the standard NCD (Non-Communicable Diseases) service system. The core idea is simple: "If you want to take less or stop medication, raise your hand – we have a service for you." Initially branded as Smart

NCD Film, the program features a unique patient-centered approach. A video was referenced to illustrate real-life transformations, including cases where patients with 20 years of diabetes and on high doses of insulin (70+ units) could achieve remission.

Key outcomes of the initiative include:

- a. Over 4,000 remission clinic visits in 5 years
- b. Around 15% remission rate
- c. Significant improvements in diabetes control indicators (HbA1c, retinopathy, nephropathy, stroke prevalence)
- d. 8,000 kg of collective weight loss among patients
- e. Decreased medication costs and insulin consumption at the district level

Building on this success, dr. Phisarn collaborated with the Family TCCN Association to launch a six-month upskilling course for Interprofessional Collaborative Teams (IPCT), equipping healthcare providers with skills to support diabetes remission. Following training, the remission clinic model was expanded to all district hospitals in Surat Thani. As a result:

- a. Over 2,000 patients achieved remission
- b. Total weight loss reached 20 tons across the province
- c. Surat Thani now ranks first in Thailand for both diabetes remission rate and diabetes control rate

Final Message:

dr. Phisarn concluded his presentation with a call for innovation in healthcare systems, especially in managing NCDs: “To thrive in the new world of NCDs, we really need new ways of doing everything.”

### **1.2.2 Economy Representative: Viet Nam – dr. Le Quang Toan**

Presentation Title: Small Steps for IPC to deal with DM Type 2 in the Community

Dr. Le Quang Toan delivered an insightful presentation on the status-quo and future potential of Interprofessional Collaboration (IPC) in managing Type 2 Diabetes Mellitus (T2DM) at the community level in Viet Nam. He began by outlining the rising burden of diabetes in the economy. Although prevalence was below 3% at the end of the 20th century, it has increased significantly in recent decades, with some areas now reporting rates as high as 7.3% among

adults aged 30 to 69 years. Diabetes has become one of the leading causes of death in Viet Nam.

In response, the Viet Nam government launched a project for diabetes control in 2012, with objectives later revised for the 2022–2025 period. These objectives focus on three key areas:

- a. Communication and education about diabetes,
- b. Screening for prediabetes and diabetes at the community level
- c. Establishing sustainable diabetes management systems through grassroots health infrastructure.

Dr. Toan explained the administrative structure of Viet Nam's healthcare system, which includes over 63 provinces, 600 districts, and more than 10,000 commune-level health stations. These community health stations are essential in delivering primary care services, but many are understaffed and under resourced some lacking even a single physician. Their responsibilities span a wide range of public health duties, such as vaccinations and nutritional deficiency prevention, leaving little capacity for chronic disease management like diabetes.

Recognizing this gap, Dr. Toan introduced a community-based diabetes management model designed for scalability within commune health stations. This model integrates IPC principles, even if not explicitly named as such. The approach involves screening individuals for diabetes using questionnaires and fasting capillary glucose tests at the commune level. Suspected cases are referred to district hospitals for diagnosis confirmation. If the patient's condition is not complicated, they are referred back to the community health station for long-term management. More complex cases are escalated to provincial or central hospitals, such as the National Hospital of Endocrinology.

To support effective community level care, Dr. Toan emphasized the importance of developing simplified treatment protocols and referral pathways. Only basic medications Metformin and Glibenclamide are available at the commune level. Patients receive regular follow-up care, and periodic referrals to higher-level facilities are arranged for

monitoring kidney function, eye health, and diabetes related complications.

A significant aspect of the model is capacity building. Central and provincial hospitals provide technical and professional training to staff at commune health stations. Community health workers and volunteers also play a key role in patient education, risk screening, medication support, and lifestyle counseling. Dr. Toan noted the use of simplified algorithms for both diabetes and hypertension management, aiming to integrate care for multiple chronic conditions using accessible tools and methods.

Dr. Toan concluded by stating that while full-scale IPC is not yet widely implemented in Viet Nam, the foundational elements team-based care, capacity building, referral systems, and integrated management are already being developed. These small, strategic steps at the community level provide a strong basis for future IPC models that can be scaled to better address the growing diabetes burden.

### **1.3 Discussion**

**Question from : Dr. Tania Tedjo Minujlo (RSUP Dr. Kariadi, Semarang, Indonesia)**

Dr. Tania asked about the digital technology used by dr. Akapol in managing diabetes patients. Specifically, she asked whether Continuous Glucose Monitoring (CGM) was used in the clinic.

**Reponse – dr. Akapol Phisarn:**

dr. Akapol confirmed the use of smart devices for reading patient data, including:

- a. Smartwatches
- b. Step counters
- c. Monitoring of physical activity, eating behavior, and home routines
- d. Use of platforms/VTA systems to analyze each patient's data

He explained that “Even walking 50 steps more per day could allow dose reduction in some medications. That's how we use the platform to identify individual patterns.” Thus, personalized care plans are developed using patient-specific data. Regarding glucose monitoring:

- a. They primarily use Blood Glucose Monitoring (BGM), not CGM.

- b. CGM is used only in a few cases, while 99% of patients in the primary care clinic rely on BGM.

**Follow-up Question – Dr. Tania:**

She asked if the blood glucose monitoring devices were provided by the government.

**Response – Dr. Akapol:**

He replied that:

- a. The devices are not free yet.
- b. Most patients pay out of pocket, but they are motivated to do so because they want to stop medications and recover from diabetes.

**Question** by: Dr. Asep Kuswandi (Poltekkes Kemenkes Tasikmalaya, Indonesia)

Dr. Asep Kuswandi raised several insightful questions to multiple speakers:

- a. To Dr. Dwi Tyastuti - Regarding role confusion in IPC teams. He asked whether there had been discussions on how to clearly define roles and responsibilities within IPC teams to avoid overlaps or undefined duties.
- b. To dr. Amit Gupta - On the topic of podiatrist roles in IPC teams. He asked:
  - 1) How to become a podiatrist in India: is it based on basic health education or a dedicated 3-year course?
  - 2) Since Indonesia does not yet have podiatry education, he was curious if India had integrated IPE (Interprofessional Education) and IPC (Interprofessional Collaboration) to address diabetes comprehensively.
- c. To dr. Akapol Phisarn - About the simplicity and effectiveness of recommending walking 200–300 meters/day to patients. He acknowledged the effectiveness and asked whether there are other simple interventions being promoted as part of diabetes management, considering the five pillars: diet, activity, medication, glucose monitoring, and education.

**Responses from Dr. Akapol Phisarn (Thailand):**

- a. He explained about a 6-month IPC training course developed under the Thai Family Medicine Association.
- b. The course focuses on helping IPC teams guide patients toward remission from Type 2 Diabetes.
- c. It emphasizes soft skills, such as listening and communication, stating: "No patient gets better by medicine, but they get better by words."

- d. The program focuses on collective competencies, not individual applications—meaning the entire team must be trained and work together.

**Dr. Amit Gupta (India):**

- a. He confirmed that podiatry is a formal discipline in India, with dedicated courses.
- b. However, not every healthcare team includes a podiatrist, though their inclusion is common in regions with high diabetic foot ulcer cases (e.g., South India).
- c. Regarding IPE vs IPC:
  - 1) IPE is necessary for both students and existing professionals, as most were not trained in interprofessional teamwork.
  - 2) Just working in the same hospital is not the same as working as a team.
  - 3) IPE educates health professionals to understand each other's roles, enabling true collaboration in achieving patient-centered goals.

**Dr. Dwi Tyastuti (Indonesia):**

- a. She responded regarding the issue of role confusion.
- b. In her hospital, they have addressed this by establishing agreements based on clinical categories, which determine which professions are involved for specific conditions.
- c. This structured agreement helps clarify roles and minimizes overlap.

## 2. Plenary and panel sharing sessions 2

### 2.1 Plenary Session 2

Topic: Population Based Policy Approach to the Prevention of Type 2 Diabetes Mellitus

Moderator: dr. Jonas Sumampouw, MA - Manado Health Polytechnic, Indonesia

#### 2.1.1 Subject 1 Dr. Anne Marie Perucic - Health Economist, Expert, WHO Headquarter

Presentation title: Population Based Fiscal Policy for the Prevention and Reduction of Type 2 DM

Dr. Anne Marie Perucic delivered an insightful presentation focusing on the role of fiscal policies in preventing and reducing the burden of type 2 diabetes mellitus (T2DM), particularly through taxation of sugar sweetened beverages (SSBs). She began by clarifying that fiscal policies could be approached from two sides: the

revenue side, primarily through taxation (such as excise taxes on sugary drinks), and the spending side, such as subsidies to promote healthier food choices.

The main emphasis was placed on the taxation aspect, especially excise taxes, as they are supported by the strongest body of evidence in reducing consumption of unhealthy products. These taxes act as economic disincentives by increasing the price of harmful products like sugary beverages, while subsidies serve as incentives by lowering the price of healthier alternatives such as fruits and water.

Dr. Perucic explained that SSBs, including sodas, energy drinks, flavored milk, and even 100% fruit juices, are significant contributors to excess sugar intake. These beverages contain free sugars, which are particularly harmful when consumed in excess. She pointed out that just one can (330 ml) of a soft drink contains about 8.5 teaspoons of sugar already nearing or exceeding WHO's recommended daily limit of 6–12 teaspoons depending on age and health status. The presentation highlighted the health risks associated with high SSB consumption, including obesity, dental caries, and increased risk for type 2 diabetes. Because SSBs are widely available, heavily marketed, and offer little to no nutritional value, reducing their consumption is seen as a crucial strategy in T2DM prevention.

Dr. Perucic noted that imposing taxes on SSBs has multiple benefits: it improves population health by discouraging consumption, generates government revenue, reduces healthcare costs in the long term, and particularly benefits lower-income populations, who tend to be more responsive to price changes and are disproportionately affected by NCDs. She stressed the importance of taxing all types of sugary beverages to avoid product substitution (e.g., switching from taxed soda to untaxed sugary fruit juice). Alarmingly, in some economies, even bottled water a healthier alternative is taxed, undermining health goals.

A case study from the United Kingdom was presented as an example of effective policy implementation. The UK's Soft Drinks Industry Levy, announced in 2016 and enforced in 2018, introduced tax tiers based on sugar content. This

allowed beverage manufacturers time to reformulate their products to lower sugar levels. The results were impressive:

- a. 50% of companies reformulated their drinks
- b. A reduction of 11% in sugar content
- c. A 44% drop in sales of high-sugar drinks
- d. A 30% reduction in sugar consumption overall
- e. A projected prevention of over 5,000 cases of obesity, particularly among young girls
- f. Revenue generation of over USD 460 million in one year

Dr. Perucic concluded by reinforcing the effectiveness of SSB taxation as a population based fiscal policy. While it should be part of a broader policy package, its role in reducing sugar consumption and preventing T2DM is both clear and evidence-based. She urged economies to adopt better-designed tax structures, ensure consistent product coverage, and monitor outcomes to optimize public health impact.

### **2.1.2 Subject 2 dr. Anas Maruf - Community Policy and Urban Planning in Diabetes Prevention**

Topic Presentation: Community policy and urban planning in Diabetes prevention

The workshop session led by dr. Anas Ma'ruf, MKM, focused on the critical issue of diabetes prevention through community-based policy and planning. dr. Anas began his presentation by acknowledging the absence of a fellow speaker due to scheduling conflicts, before delving into his structured talk consisting of five key areas: situational analysis of diabetes, disease trends and current programs, community health dynamics, accessibility of healthy food, and strategic policy progression.

He began with an overview of the global diabetes burden, noting that over 500 million adults aged 20 to 79 are currently living with diabetes representing one in nine people globally. This number is projected to reach 853 million by 2050, or approximately one in eight adults. Alarmingly, 81% of individuals with diabetes reside in low and middle-income economies, where health systems often face resource constraints. Diabetes is the cause of 3.5 million deaths annually, or one death every six seconds. Furthermore, 43% of adults with diabetes remain undiagnosed approximately 252 million people.

Indonesia currently ranks fifth globally for the number of people living with diabetes, with over 20 million adults affected as of 2024. This figure is expected to rise to 28 million by 2050. The prevalence of diabetes among adults in Indonesia has grown from 8.5% in 2018 to 11.7% in recent years, emphasizing the urgency for coordinated and preventive action.

dr. Anas highlighted Indonesia's initiative, Periksa Kesehatan (PE) or Free Medical Check Up Program, as part of the government's Quick Win health strategy. This program provides free early detection and diagnostic services targeting non communicable diseases (NCDs), including diabetes. By June 2025, over 8 million people across 38 provinces had participated, with women accounting for over 60% of the participants. The results showed that one in ten people aged 40 and above were diagnosed with diabetes.

Emphasizing the need to focus on this age group, dr. Anas presented data showing a steep increase in diabetes prevalence after age 40. He also shared statistics showing the economic burden of NCDs, with 65% of Indonesia's National Health Insurance (BPJS Kesehatan) spending totaling more than IDR 159 trillion between 2019 and 2023 allocated to diseases like diabetes, cardiovascular conditions, cancer, and kidney diseases.

A concerning behavioral pattern was also discussed, with research revealing high prevalence of risk factors among Indonesians. Over 90% of people reported inadequate fruit and vegetable intake, while many also practiced excessive consumptions of sugar, salt, and fatty foods. Other common behaviors include smoking and low physical activity, all of which significantly contribute to the rising burden of diabetes and other NCDs.

To address this, Indonesia has committed to achieving global NCD targets, including a 25% reduction in premature mortality from diabetes, cancer, and cardiovascular and respiratory diseases by 2030. The speaker outlined Indonesia's six pillars of health transformation, ranging from strengthening primary care to ensuring technological advancement in health. Efforts also include the establishment of healthy and happy cities, integrating health policies into

urban planning. The speaker emphasized the importance of accessibility to healthy food and the regulation of unhealthy food and beverages, especially in urban environments.

dr. Anas conclude that:

- a. Diabetes is a Growing Global and Economy Crisis
- b. Healthy Cities must become a Core Strategy
- c. Food Environments Shape Health Outcomes
- d. Community-Based Health Programs are Crucial
- e. Data-Driven, Participatory Policy Design is Essential
- f. Socioeconomic Determinants must be Addressed
- g. Collaboration Across Sectors is a Foundation
- h. Monitoring and Evaluation are Critical

dr. Anas ended the session by calling for multi sectoral collaboration across government ministries, universities, communities, and the private sector to strengthen diabetes prevention efforts.

## 2.2 Discussion

### **Question from dr. Le Quang Toan (Viet Nam) to Dr. Anne Marie Perucic (WHO – Health Economist)**

dr. Le Quang Toan expressed appreciation for the insightful presentation and raised a concern frequently encountered in policy discussions specifically, regarding the level of scientific evidence linking sugar consumption to an increased risk of type 2 diabetes mellitus. He cited a recent session in the Viet Nam Parliament, where a proposal to increase taxes on sugar sweetened products was met with skepticism by some members, who claimed that insufficient evidence supports the link between sugar intake and disease risk. He asked Dr. Perucic to clarify the strength of evidence supporting the association between sugar consumption and diabetes.

### **Response – Dr. Anne-Marie Perucic:**

Dr. Perucic acknowledged the relevance of the question and clarified her role as a health economist, emphasizing her expertise in fiscal coordination and statistical modeling rather than clinical or biomedical science. However, she noted the following points:

- a. While causality may not always be firmly established in every context, strong evidence of association exists between sugar consumption especially through sugar-sweetened beverages (SSBs) and increased risk of type 2 diabetes.
- b. She referenced South Africa's Health Promotion Levy as a case in point. The rationale for the implementation of that tax was

based on the high prevalence of diabetes and the aim of reducing sugar consumption as a strategy to address it.

- c. Dr. Perucic committed to reviewing the literature further and sharing relevant studies or resources with the event organizers, which could support further economy-level advocacy and policymaking.

**Question from Dr. Ida Ayu Kshanti – PEDI to Dr. Anne-Marie Perucic (WHO – Health Economist)**

Dr. Ida PIDI shared an observation from her local community, where she has seen an increasing trend of significant price discounts offered by SSB (sugar sweetened beverage) manufacturers. Despite government efforts to apply taxes, these competitive pricing strategies undermine the intended effect of the fiscal policies. She asked Dr. Perucic if there are any ways to address this challenge.

**Response – Dr. Anne-Marie Perucic:**

Dr. Perucic acknowledged that manufacturer discounts are indeed a significant problem, as they neutralize the price impact created by taxation. She highlighted the following points:

- a. Discounts are part of aggressive marketing strategies, which are not currently regulated in most economies.
- b. The solution requires a broader policy approach, not just fiscal tools. She emphasized that: “Tax alone is not enough.”
- c. To effectively counteract these discounts, governments should implement complementary policies such as: Restrictions on marketing, similar to tobacco control policies (e.g., bans on advertising, promotion, and sponsorship); Such regulations could also include banning price promotions, limit retail displays, and controlling point-of-sale strategies for unhealthy products like sugary drinks.

Dr. Perucic concluded that addressing this issue would require integrated public health policy frameworks where fiscal, regulatory, and behavioral interventions work together.

**Question from Mrs. Zulfiayu (Poltekkes Kemenkes Gorontalo) to Dr. Anas**

Mrs. Zulfiayu expressed her interest in the success of the SSB (sugar-sweetened beverage) tax policy in England, which has been effective in reducing sugary drink consumption. She asked whether the Indonesian government is brave and ready enough to implement a similar policy, considering the public health burden related to sugar consumption.

**Response – Dr. Anas:**

- a. The Indonesian government is currently in the process of preparing a regulatory framework to implement SSB taxation.
- b. The Ministry of Health, in collaboration with the Ministry of Finance and the Ministry of Economic Affairs, has proposed the implementation of an SSB tax.
- c. Currently, Indonesia only taxes three main products: alcohol, alcoholic beverages, and tobacco.
- d. A new government regulation (PP) is being drafted to include SSBs as a fourth category.
- e. This process requires time, particularly for:
  - 1) Analyzing the market structure,
  - 2) Assessing the best type of tax design,
  - 3) Coordinating across ministries and agencies.
- f. Dr. Anas stated that the government is committed, and it is expected that the regulation (PP) will be completed within the year.
- g. The actual implementation of the SSB tax might begin one to two years after the regulation is passed, to allow adequate preparation.

**3. Closing Ceremony**

The Workshop concluded with a formal closing session chaired by the host economy. The Chair summarized the two days of workshop:

- a. Day 1 had outlined the burden of diabetes and systemic challenges, and introduced IPC as a critical approach.
- b. Day 2 had advanced into practical strategies, policy innovations, and collaborative exercises.

The following key outcomes were recorded:

- a. Agreement that interprofessional collaboration (IPC) is indispensable for sustainable diabetes management.
- b. Recognition of the importance of interprofessional education (IPE) as the foundation of IPC.
- c. Endorsement of population-based policies; including fiscal measures and healthy urban design, as critical complements to clinical care.
- d. Commitment to share curricula, best practices, and pilot models across economies.
- e. Recommendation for APEC HWG to establish a knowledge-sharing platform on IPC and diabetes prevention (The recommendations are provided in Appendix 1).

The Acting Director thanked all speakers, moderators, and participants, as well as Manado Health Polytechnic, MoH Indonesia for hosting, and reaffirmed Indonesia's commitment to advancing APEC's

collective agenda on health and non-communicable diseases. The Workshop was officially declared closed.

## **Appendix 1. Workshop Recommendation**

### **APEC Diabetes Workshop, Manado 2025**

**“Diminishing the Burden of Type 2 Diabetes Mellitus in the Community through an Interprofessional Collaboration (IPC) Approach”**

Manado, 1 – 2 July 2025

### **RECOMMENDATION**

#### **Strengthening Prevention and Management of Type 2 Diabetes in the APEC Region**

We, the representatives of the Asia-Pacific Economic Cooperation members, namely Brunei Darussalam; People's Republic of China; Indonesia; The Russian Federation; Thailand; and Viet Nam, are participating in the APEC Workshop on Type 2 Diabetes Mellitus, held in Manado, Indonesia, on 1-2 July 2025.

Based on the entire workshop process, which included keynote presentations, four plenary sessions on specific topics with questions and perspectives, six economy-sharing sessions, two group discussion sessions, and the development of an action plan for the economies, the workshop concluded with the following recommendations:

1. Strengthening Community-Based Education and Awareness
  - a. Develop Campaigns:  
APEC economies should implement sustained, culturally appropriate public education campaigns focusing on T2DM risk factors, prevention, and self-management, leveraging mass media, digital health, and local community channels.
  - b. Expanding the Role of Diabetes Educators  
Encourage APEC economies to formally integrate diabetes educators, including both nurses and trained physicians at all levels of care, especially in primary care and community-based services
  - c. Empower Community Volunteers:  
Strengthen and expand training programs for community health workers and cadres (e.g., Indonesia's Posbindu, Indonesia's Posyandu) to deliver targeted education, home visits, and early detection, ensuring quality and consistency across regions.

- d. Utilize Schools and Workplaces:  
Encourage integration of T2DM awareness and healthy lifestyle education into school curricula and workplace wellness programs to reach broader population groups early and sustainably.
- 2. Enhancing Interprofessional Collaboration (IPC) in Primary Care
  - a. Establish Multidisciplinary IPC Teams:  
Formalize multidisciplinary teams at primary healthcare levels, ensuring clear role definitions for physicians, nurses, dietitians, diabetes educators, pharmacists, psychologists, exercise physiologists, and community workers.
  - b. Create IPC Economy Guidelines:  
Adopt or adapt IPC guidelines for T2DM, including shared decision-making processes, communication protocols, and standard operating procedures to ensure coordinated and holistic care.
  - c. Promote Continuous IPC Training:  
Invest in regular interprofessional education (IPE) and joint training programs for all health professionals to build trust, clarify responsibilities, and foster a collaborative culture.
  - d. Monitor and Evaluate IPC Performance:  
Introduce performance indicators for IPC teams to monitor patient outcomes, communication effectiveness, and team functionality, with periodic reviews to identify best practices and areas for improvement.
- 3. Expanding Use of Technology and Data Systems
  - a. Leverage Digital Health Solutions:  
Scale up telehealth, mobile health (mHealth) apps, AI-supported screening, and electronic health records to facilitate remote monitoring, patient education, and data-driven decision-making, especially in underserved areas.
  - b. Ensure Technology Access Equity:  
Bridge the digital divide by ensuring that rural and low-income populations have affordable access to the necessary devices, internet connectivity, and technical support.
  - c. Promote Interoperable Health Information Systems:  
Encourage the development of interoperable information systems to enable seamless data sharing among IPC teams and across care levels, enhancing continuity and quality of care.

- d. **Safeguard Data Privacy and Standards:**  
Establish robust governance frameworks for safe, ethical, and effective use of digital tools and AI, ensuring clinician oversight and patient data privacy.
- 4. **Strengthening Psychosocial Support and Patient Empowerment**
  - a. **Embed Mental Health Services:**  
Incorporate routine psychological screening and counseling into diabetes care plans to address stress, depression, and anxiety, recognizing their impact on treatment adherence and quality of life.
  - b. **Build Peer Support Networks:**  
Facilitate and fund community-based peer groups and patient associations that offer safe spaces for experience sharing, motivation, and emotional resilience.
  - c. **Train IPC Teams in Psychosocial Care:**  
Equip IPC members with competencies in motivational interviewing, culturally sensitive communication, and referral pathways for mental health services.
  - d. **Standardize Diabetes Self-Management Education and Support (DSMES) Programs:**  
Promote widespread implementation of structured DSMES to enhance treatment adherence, patient empowerment, and glycemic control.
  - e. **Monitor Well-Being Indicators:**  
Use patient-reported outcomes (PROs) to track psychosocial well-being and integrate these insights into personalized care planning.
- 5. **Supporting Policy Innovation and Fiscal Measures**
  - a. **Implement Fiscal Policies for Prevention:**  
Encourage APEC members to adopt taxes on sugar-sweetened beverages (SSBs) and unhealthy foods while providing subsidies for fruits, vegetables, and healthier alternatives.
  - b. **Facilitate Healthy Environments:**  
Advocate for urban planning and community infrastructure that supports physical activity (e.g., safe walking paths, community exercise facilities).

- c. Incentivize Preventive Services:  
Promote value-based insurance designs and reimbursement models that reward prevention, early detection, and adherence to comprehensive care plans.
- d. Strengthen Local Governance:  
Support local governments to design community-driven action plans using participatory models, ensuring policies are adapted to local cultures and socioeconomic realities.

6. Advancing Monitoring, Research, and Knowledge Sharing

- a. Strengthen Surveillance Systems:  
Establish or improve economy diabetes registries and community-level reporting systems to track prevalence, treatment outcomes, and IPC effectiveness.
- b. Encourage Collaborative Research:  
Promote cross-economy research on innovative models for IPC, digital health integration, fiscal policy impact, and culturally tailored community interventions.
- c. Disseminate Best Practices:  
Facilitate regular APEC-level forums and working groups to exchange lessons learned, successful models (e.g., People's Republic of China's AI integration, Indonesia's Posbindu), and scalable solutions.
- d. Evaluate and Adapt:  
Embed continuous evaluation and feedback loops in all programs, adjusting strategies based on evidence and evolving community needs.

7. Enhancing Capacity through Specialized Training on Diabetes Remission

- a. Introduce Remission-Focused Training:  
Encourage APEC economies to implement specialized training programs for healthcare providers focused on diabetes remission services. These should cover understanding the pathophysiology of remission, lifestyle interventions (e.g., diet and physical activity), effective nursing and multidisciplinary care, pharmacotherapy, patient engagement strategies, and clinic setup for remission services.
- b. Promote Multidisciplinary Participation:  
Design training programs that are inclusive of all relevant healthcare providers, such as doctors, nurses, dietitians, and physical therapists, particularly those working in multidisciplinary teams at hospitals and primary care centers.

c. Align Training with Patient-Centered Goals:

Ensure that the ultimate goal of such training is to equip healthcare professionals with the knowledge and practical skills to help patients with Type 2 Diabetes achieve remission, enhance their quality of life, and reduce long-term complications

This recommendation strengthens the collective commitment of APEC members to act decisively and collaboratively. Through this unified approach, we aim to develop resilient health systems and empowered communities capable of confronting the T2DM epidemic.

Manado, 2 July 2025