ADA 2025 Clinical and AI / ML Preview

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ADA 2025 – General Overview

- **Global gathering:** Thousands of clinicians, researchers, and policymakers will meet to discuss advances in diabetes prevention, treatment, and population health
- **Translational focus:** Scientific sessions bridging molecular discovery, clinical trials, and implementation science in both T1D and T2D
- **Breakthrough pipelines:** Major announcements on GLP-1 analogs, beta-cell regeneration, and once-weekly insulins will draw significant attention
- **Patient-first approach:** Real-world evidence and PROs will take center stage, shaping guidelines and regulatory momentum
- **Digital and AI-led solutions:** Presentations will highlight CGM innovations, predictive insulin dosing, and digital therapeutics
- **Equity and access:** New data will address racial, geographic, and economic disparities in diabetes care and outcomes

ADA 2025– Conference Themes (1/2)

- **Redefining T2D goals:** Care strategies are expected to shift from glycemic targets toward preserving β-cell function and reducing organ complications
- **T1D delay and prevention:** Trials on immunotherapy and early screening are forecasted to highlight disease-modifying potential
- **GLP-1 and beyond:** Multi-agonist therapies (GLP-1/GIP/GCG) are set to redefine standards in metabolic and weight management
- **Renal and CV synergy:** SGLT2i, GLP-1RA, and MRAs are projected to emerge as complementary therapies for cardio-renal protection
- **Automated insulin advances:** New closed-loop systems are poised to demonstrate gains in Time in Range and quality of life

ADA 2025– Conference Themes (2/2)

- **Obesity as a core target:** Obesity-focused data, including STEP UP and REBUILDING-1, are likely to reposition obesity as a frontline priority
- **Behavioral tech solutions:** CBT apps, digital nudging, and mobile health programs are expected to gain traction in diabetes self-management
- **Implementation and scale:** Pragmatic trials and integrated care models aim to bridge the research-to-practice gap
- **Special populations focus:** Research will emphasize tailored interventions for youth, the elderly, and underrepresented groups
- **Nutrition as therapy:** Plant-based, time-restricted, and low-AGE diet trials are anticipated to offer evidence for lifestyle-based metabolic control

Noteworthy Scientific presentations at ADA 2025

Key Topics From Notable Presentations (1/7)

- **Cardiovascular & Kidney Outcomes:** ADA data will underscore new clinical tools and biomarkers to improve prediction and treatment targeting for cardiovascular and kidney outcomes in T2D, particularly when stratified by triglyceride variability and proteinuria status

  - Triglyceride Variability Predicts Heart Failure Risk: In the ACCORD trial (n=9,930), greater visit-to-visit triglyceride variability was linked to higher heart failure risk, especially among Black participants and those on intensive lipid therapy (HR 1.24, p=0.008)

  - SGLT2i/GLP-1RA Effectiveness Depends on Proteinuria: Among 76,263 patients with T2D, SGLT2i or GLP-1RA use significantly reduced nephropathy risk only in those with baseline proteinuria (ACR ≥30 mg/g). No benefit was seen in non-proteinuric individuals

  - KidneyIntelX Improves Risk Stratification and Monitoring: KidneyIntelX identified high-risk DKD patients in CANVAS/CREDENCE (HR 2.26). Risk reduction at one year correlated with fewer events, supporting its use to guide treatment and monitor CKD progression

Key Topics From Notable Presentations (2/7)

- **Clinical Trials & Drug Development:** Sessions will highlight emerging agents, including dual incretin agonists and novel metabolic pathway modulators, demonstrate substantial glycemic, weight, and cardiometabolic efficacy with good safety in early-phase diabetes trials

  - Immunomodulation in Type 1 Diabetes: Baricitinib suppressed natural killer cell proliferation in BANDIT trial participants with new-onset T1D by downregulating JAK-STAT genes. These results support its therapeutic potential through immune modulation

  - Next-Gen GLP-1/GIP Agonists Show Strong Metabolic Benefits: Dual agonists like HDM1005 and HRS9531 delivered >10% weight loss and HbA1c reductions up to −2.7%. Oral and injectable forms were safe, with promising glucose and lipid improvements in early-phase trials

  - Novel Therapies Target Insulin Resistance and Obesity: CK-0045 (IL-22 agonist) and (PEG)-BHD1028 (adiponectin receptor agonist) reduced cholesterol, C-peptide, and glucose AUCs in early studies, offering new metabolic mechanisms without severe adverse effects

Key Topics From Notable Presentations (3/7)

- **Diabetes (T1D & T2D)**: The conference will highlight the targeted psychosocial support, equitable technology access, and innovative therapies that significantly enhance glycemic control and quality of life across diverse diabetes populations
  - Socioeconomic and Health Equity in Diabetes Care: Global SWEET registry analysis showed lower-GDP countries had worse HbA1c, less technology access, and more insulin use. Middle-income nations achieved best control, highlighting complex socioeconomic influences
  - Psychosocial and Behavioral Interventions Improve Outcomes: Telehealth-based HAPPY T1D program improved time-in-range in adolescents and young adults. Self-efficacy interventions in underserved adults enhanced medication adherence, indirectly improving HbA1c in high-risk T2D
  - New Therapeutics and Technologies Offer Real-World Benefits: iLet bionic pancreas use improved HbA1c in T1D and T2D with minimal hypoglycemia. Switching to iGlarLixi reduced HbA1c and treatment burden. Oral agents like cofrogliptin and HRS-7535 demonstrated metabolic efficacy

Key Topics From Notable Presentations (4/7)

- **Behavioral, Psychosocial & Lifestyle:** Experts will discuss how Behavioral and psychosocial programs, particularly those culturally tailored or emotionally focused, play a critical role in improving diabetes outcomes across populations
  - Sleep and Technology in Glycemic Management: A 12-week mHealth trial in Japan extended sleep by ~33 minutes in short-sleeping T2D patients. Glycemic and BMI trends improved, though not significantly, indicating need for larger studies
  - Culturally and Emotionally Responsive Interventions: Culturally tailored DSMES boosted engagement and self-care in Black adults. Guided self-determination reduced distress and depression, while ACT-based TunedIn therapy improved HbA1c via emotional and problem-solving pathways
  - Youth-Centric and Incentive-Based Strategies: Text reminders reduced emotional burden in teens with T1D. Peer support improved self-efficacy in young adults. Financial incentives plus coaching achieved >1% HbA1c drop in diverse adults.

Key Topics From Notable Presentations (5/7)

- **Health Equity, Disparities & Systems:** Discussions will emphasize that Holistic strategies, policy, education, care coordination, and workforce equity are vital to closing diabetes disparities across populations
  - Underperformance in Global T2D Management: In China, only 36.5% of adults with T2D met HbA1c targets, with <10% achieving full cardiometabolic control. Similar gaps were seen in India, where 94% of clinicians favored empagliflozin-linagliptin for multi-risk patients, reflecting real-world preferences for integrated therapy in undercontrolled cases
  - Models Improving Access and Outcomes: Coordinated care models such as the Eliminating Barriers Initiative achieved nearly 2% HbA1c reduction among underserved patients by addressing social determinants. CME programs also increased hypercortisolism screening, while exercise prescription integration into digital trials showed high feasibility
  - Bridging Workforce and Cultural Gaps: T1D Exchange data revealed mismatches between pediatric patient demographics and provider diversity, especially for minoritized youth with T2D. Addressing representation in care teams may enhance engagement, cultural alignment, and equitable outcomes

Key Topics From Notable Presentations (6/7)

- **Obesity & Weight Management:** Data will reinforce the value of next-generation GLP-1/GIP-based therapies that are reshaping obesity care, offering substantial weight loss and improved cardiometabolic profiles, while long-term safety and risk monitoring remain essential
  - Novel GLP-1/GIP Agonists Drive Impressive Weight Loss: Agents like BGM0504, RAY1225, MET097, and Amycretin induced up to 24.3% bodyweight reductions in obese adults. Cardiometabolic benefits were consistently observed, with generally mild gastrointestinal side effects
  - Oral and Biased GLP-1RAs Show Promising Early Data: First-in-class oral molecules (e.g., HDM1002, VCT220, RGT-075) and biased agonists (e.g., MET097, MWN109) demonstrated meaningful weight loss and tolerability, supporting the development of titration-free or oral obesity treatments
  - Cancer Risk and Alopecia Insights in AOM Use: AOM-induced weight loss did not reduce cancer risk (RR=0.99), and alopecia risk was elevated in those experiencing rapid weight reduction, particularly in younger individuals with obesity.

Key Topics From Notable Presentations (7/7)

- **Technology & Devices:** Sessions will emphasize that automated insulin delivery and novel sensing technologies are transforming diabetes care by enhancing glycemic control, supporting safe fasting, and offering non-invasive monitoring alternatives

  - Bionic and Automated Systems Improve Real-World Glycemic Control: The iLet bionic pancreas and MiniMed 780G system improved HbA1c and Time in Range (TIR) across diverse populations, including children and older adults, without increasing hypoglycemia risk

  - Fructosamine Identified as Key Marker for AID Response: In Ramadan fasting trials, only changes in fructosamine—not age, sex, or HbA1, predicted improved TIR with automated insulin delivery systems, aiding personalization of therapy

  - Non-Invasive Glucose Monitoring Demonstrates Strong Accuracy: A novel optical sensor achieved >89% agreement with traditional methods and showed potential for, pain-free glucose monitoring, especially accurate at lower glucose levels

Focus of Key Industry Sponsored Sessions at ADA 2025 (1/5)

- **AstraZeneca:**
  - Focus Areas: Preclinical Obesity Therapies
  - Presentations will explore early-stage research into novel anti-obesity compounds and mechanisms, expanding the company's footprint in metabolic disease beyond glucose control
- **Oregon Health:**
  - Focus Areas: Psychosocial Interventions in Youth with T1D
  - Sessions will emphasize family-based behavioral strategies to reduce disparities and improve diabetes outcomes in children and adolescents.
- **AdventHealth:**
  - Focus Areas: Hypoglycemia, Pediatric Diabetes, and Obesity in T1D
  - Multiple presentations will address treatment-induced hypoglycemia, emerging therapies for pediatric diabetes, and obesity trends in T1D, including physiology and prevention strategies

Focus of Key Industry Sponsored Sessions at ADA 2025 (2/5)

- **Biomed Industries:**
  - Focus Areas: Incretin Combinations for Obesity
  - Clinical findings will highlight the efficacy of multi-incretin therapies targeting obesity, including appetite regulation and metabolic improvements
- **Allarta Life Science:**
  - Focus Areas: Stem Cell–Derived Islet Replacement
  - Data will showcase advancements in cell therapy for T1D, focusing on scalable, immunoprotective stem cell–based islet transplantation
- **Genentech:**
  - Focus Areas: Organ-Specific Effects of Diabetes Medications
  - Research will examine the impact of glucose-lowering therapies on kidney, liver, and epicardial function to inform multi-organ care strategies

Focus of Key Industry Sponsored Sessions at ADA 2025 (3/5)

- **Beta Bionics:**
  - Focus Areas: Real-World Use of Automated Insulin Delivery
  - Real-world data will be presented on hybrid closed-loop performance and user outcomes in diverse populations with diabetes
- **Eli Lilly:**
  - Focus Areas: Incretin Therapies and Insulin Bioequivalence
  - Sessions will cover subgroup insights from incretin trials and pharmacokinetics comparing Efsitora U-500 vs. U-1000 formulations in insulin-treated patients
- **Dexcom:**
  - Focus Areas: CGM in Pregnancy, Type 2 Diabetes, and Emerging Tech
  - Presentations will focus on CGM's role in pregnancy, T2D behavioral outcomes, and novel sensors enhancing glycemic visibility across diabetes types

Focus of Key Industry Sponsored Sessions at ADA 2025 (4/5)

- **Novo Nordisk:**
  - Focus Areas: Cardiometabolic Complications and CagriSema Research
  - Topics will span stroke and ASCVD epidemiology in diabetes and mechanistic studies of CagriSema in obesity, including energy intake and mitochondrial function
- **Medtronic:**
  - Focus Areas: Automated Insulin Delivery Systems
  - Clinical insights will highlight how the MiniMed™ 780G adapts to real-life challenges, enhancing time-in-range and glycemic stability
- **Abbott:**
  - Focus Areas: Perioperative Glucose Optimization
  - Data will support carbohydrate loading protocols for surgical patients with diabetes to maintain intraoperative glucose stability

Focus of Key Industry Sponsored Sessions at ADA 2025 (5/5)

- **Sanofi:**
  - Focus Areas: T1D Prediction via AI and Claims Data
  - Machine learning approaches will be featured for early-stage T1D detection, using large-scale claims data to enable preventive screening.
- **Novartis:**
  - Focus Areas: Anti-CD40 Therapy in New-Onset T1D
  - Results from iscalimab trials will demonstrate immune modulation potential in adolescents and young adults with recent-onset T1D

Notable Presentations And Late-breaking Sessions At ADA 2025

Notable Presentations At ADA 2025
Cardiovascular & Kidney Outcomes (1/6)

Date	Title	Author	Summary
21 June 2025	Prediction of Atherosclerotic Cardiovascular Disease vs. Heart Failure in Type 2 Diabetes—A Post Hoc Analysis of the REWIND and ORIGIN Trials. 1309]	Jonathan E Shaw	• **Introduction:** Predicting whether ASCVD or HF is the first CVD manifestation in T2D may improve preventive strategies. • **Methodology**: In 6,175 CVD-free T2D participants from ORIGIN and REWIND (mean age 64), multi-state Poisson models assessed clinical predictors of ASCVD, HF, or other CVD over ~5.8 years. • **Results:** ASCVD was most common and linked to higher LDL and HbA1c. HF (16.8%) was more associated with age, BMI, and urine ACR. Risk profiles predicted distinct event patterns despite equal total CVD risk. • **Conclusions:** Risk factors predict ASCVD vs. HF onset, offering targeted prevention strategies in T2D.
21 June 2025	Race/Ethnicity and Treatment Arm Modify the Relationship of Triglyceride Variability with Heart Failure in the ACCORD Trial. 1310]	Daniel S Nuyujukian	• **Introduction:** This study explored whether triglyceride variability predicts heart failure (HF) risk in type 2 diabetes. • **Methodology**: Using ACCORD trial data (n=9,930), visit-to-visit triglyceride coefficient of variation (CV-Trig) was analyzed via time-dependent Cox models. HF outcomes (n=349) included hospitalization or HF-related death. • **Results:** Higher CV-Trig was linked to increased HF risk (HR 1.12, p=0.03), especially in the intensive lipid-lowering arm (HR 1.24, p=0.008) and among Black participants. • **Conclusions:** Triglyceride variability independently predicts HF, particularly in specific subgroups, supporting its role as a modifiable risk factor in diabetes care.

Notable Presentations At ADA 2025
Cardiovascular & Kidney Outcomes (2/6)

Date	Title	Author	Summary
21 June 2025	The Long-Term Effects of Structured Lifestyle Interventions on the Absolute 10-Year CVD Risk among Asian Indians—Results from the Nine-Year Follow-up Study of the Kerala Diabetes Prevention Program. 1311]	Sathish Thirunavukkarasu	• **Introduction:** This study assessed long-term CVD risk reduction from lifestyle intervention in high-risk Asian Indians. • **Methodology**: The Kerala DPP enrolled 1,007 adults with high diabetes risk into a 12-month lifestyle program. CVD risk was measured via Framingham Risk Score over 9 years. • **Results:** At 1 and 2 years, CVD risk was modestly reduced (−0.64%, p=0.030; −0.68%, p=0.050), but no difference was seen at 9 years (0.16%, p=0.810). • **Conclusions:** Early CVD risk improvements were not sustained at 9 years, likely impacted by regional crises (floods, COVID-19).
21 June 2025	Association of Haptoglobin Levels and Phenotype with Cardiovascular Disease in Adults with Type 2 Diabetes—A FIELD Trial Substudy. 1314]	Anthony C Keech	• **Introduction:** Haptoglobin (HP), an antioxidant glycoprotein, may influence CVD risk in T2D, but its role in fenofibrate response is unclear. • **Methodology**: In the FIELD trial (n=8,047 T2D adults), baseline HP phenotype and levels were analyzed using ELISA and immunoturbidimetry. • **Results:** Higher HP levels—but not phenotype—were linked to greater CVD risk, especially in HP 1-1 individuals (P=0.039 for interaction). HP 1-1 with low HP levels had lowest CVD risk. Fenofibrate benefit was independent of HP status. • **Conclusions:** HP levels and phenotype may refine CVD risk stratification in T2D but do not guide fenofibrate response.

Notable Presentations At ADA 2025
Cardiovascular & Kidney Outcomes (3/6)

Date	Title	Author	Summary
21 June 2025	Lipid-Lowering Therapy Patterns of High-Risk Cardiovascular Patients without Prior Myocardial Infarction or Stroke—VESALIUS-REAL—Results from Patients with High-Risk Diabetes in the U.S.. 1315]	Swati Sakhuja	• **Introduction:** This real-world analysis (VESALIUS-REAL) assessed lipid-lowering therapy (LLT) use in U.S. patients with high-risk diabetes without prior MI or stroke. • **Methodology**: Using HealthVerity claims (2016–2022), 103,981 adults ≥50 years with LDL-C ≥90 mg/dL and high-risk DM or vascular disease were evaluated for LLT use and LDL-C outcomes over 1 year. • **Results:** Among 37,072 with follow-up, 81% had LDL-C >70 mg/dL, but only 48% received LLT. Of those untreated at baseline, just 36% initiated LLT; only 24% had therapy intensified. • **Conclusions:** Significant undertreatment persists in high-risk diabetes, highlighting missed opportunities in LDL-C management.
21 June 2025	Systemic Inflammation Response Index Independently Associated with Increased Mortality in Individuals with Metabolic Syndrome—Results from the NHANES Prospective Cohort Study. 1344]	Junwei Guo	• **Introduction:** This study evaluated whether the systemic inflammation response index (SIRI) predicts mortality in U.S. adults with metabolic syndrome (MetS). • **Methodology**: Using NHANES 2007–2018 data, 3,431 MetS adults were followed over ~89 months. SIRI was calculated from neutrophil, monocyte, and lymphocyte counts. Cox models assessed mortality risk. • **Results:** Each unit increase in SIRI was linked to higher all-cause (HR=1.15, p<0.001) and cardiovascular mortality (HR=1.16, p=0.004). Subgroup and spline analyses confirmed robust, linear associations. • **Conclusions:** SIRI independently predicts mortality in MetS, supporting its potential as a prognostic inflammatory biomarker.

Notable Presentations At ADA 2025
Cardiovascular & Kidney Outcomes (4/6)

Date	Title	Author	Summary
22 June 2025	The Confidence Trial—Efficacy/Safety of Combining Finerenone with Empagliflozin in People with Chronic Kidney Disease and Type 2 Diabetes. 1863]	Janet B McGill	• **Introduction:** Finerenone and SGLT2 inhibitors reduce CKD and CV risk in T2D, but optimal initiation strategy remains unclear. • **Methodology**: CONFIDENCE is a global, randomized, double-blind trial comparing finerenone, empagliflozin, and their combination in adults with CKD and T2D. Primary endpoint: change in UACR at Day 180. • **Results:** 818 patients were enrolled across 14 countries (mean eGFR: 54.2; median UACR: 583 mg/g; HbA1c: 7.3%). Baseline therapy included GLP-1 RAs (23%) and insulin (39%). • **Conclusions:** CONFIDENCE will clarify the efficacy and safety of combined finerenone and empagliflozin therapy vs monotherapy in CKD with T2D.
22 June 2025	Impact of Semaglutide on Kidney, Cardiovascular, and Mortality Outcomes by Baseline BMI and Weight Loss in People with T2D and CKD—Data from the FLOW Trial. 1971]	Johannes FE Mann	• **Introduction:** The FLOW trial previously showed semaglutide reduces kidney, cardiovascular (CV), and mortality risk in T2D with CKD; this analysis examined the role of baseline BMI and weight change. • **Methodology**: In 3,533 participants randomized to semaglutide 1.0 mg or placebo, outcomes were assessed across BMI strata and analyzed for mediation by body weight change. • **Results:** Baseline BMI was 32.0 kg/m². Semaglutide's benefits on kidney, CV, and mortality outcomes were consistent across BMI categories (interaction $p > 0.62$). Weight loss had minimal mediation effect. • **Conclusions:** Semaglutide's outcome benefits were independent of BMI and weight loss, supporting broader therapeutic utility.

Notable Presentations At ADA 2025
Cardiovascular & Kidney Outcomes (5/6)

Date	Title	Author	Summary
23 June 2025	The Diagnostic Efficacy of Optical Coherence Tomography Angiographyin Detecting Diabetic Kidney Disease. 401]	Lin Zhang	• **Introduction:** This study assessed the diagnostic utility of OCTA in detecting diabetic kidney disease (DKD) confirmed by renal biopsy. • **Methodology**: In a multicenter case-control study, 100 T2D patients from Beijing were grouped by biopsy-confirmed DKD status (63 DKD, 37 non-DKD). OCTA, fundus photography, and clinical labs were compared. • **Results:** OCTA showed high diagnostic accuracy for DKD. Combining OCTA with fundus photography improved detection (>85% efficacy). Key OCTA metrics (vascular density, perfusion) differed significantly between groups (AUC >70%). • **Conclusions:** OCTA plus fundus imaging enhances noninvasive DKD diagnosis and may support early clinical detection.
23 June 2025	Proteinuria and Progression of Kidney Disease in Patients with T2D Treated with SGLT2i and GLP-1RA—A Target Trial Emulation. 415]	Alexander Turchin	• **Introduction:** SGLT2i and GLP1-RA reduce kidney disease progression in T2D, but their effect by proteinuria status is unclear. • **Methodology**: Using U.S. real-world data (2013–2022), 76,263 T2D patients adding a second drug post-metformin were studied. The composite kidney outcome was eGFR < 15 or doubling of creatinine, stratified by proteinuria (ACR ≥ 30 mg/g). • **Results:** In proteinuric patients, SGLT2i/GLP1-RA lowered 5-year nephropathy risk vs. DPP4i (RR 0.57). No benefit was seen without proteinuria (RR 1.07). Sulfonylureas showed no proteinuria-based effect. • **Conclusions:** SGLT2i/GLP1-RA offer renal protection only in T2D patients with baseline proteinuria.

Notable Presentations At ADA 2025
Cardiovascular & Kidney Outcomes (6/6)

Date	Title	Author	Summary
23 June 2025	Baseline Risk and Longitudinal Changes in KidneyIntelX Scores and Their Association with Kidney Outcomes in the CANVAS and CREDENCE Trials. 420]	Hiddo L Heerspink	• **Introduction:** KidneyIntelX predicts DKD progression using biomarkers and clinical data. This study evaluated its predictive value across CKD stages in T2D. • **Methodology**: In CANVAS/CREDENCE (n=4,677), TNFR1, TNFR2, and KIM-1 were measured. KidneyIntelX scores at baseline and year 1 were analyzed for kidney outcomes (≥40% eGFR decline or failure). • **Results:** High-risk patients (18.5%) had significantly greater kidney event risk (HR 2.26). Canagliflozin reduced risk score more than placebo. Shifting to low risk at year 1 correlated with the lowest event rate (0.3/100 person-years). • **Conclusions:** KidneyIntelX effectively stratifies DKD risk and tracks treatment impact, supporting its use in T2D CKD management.
23 June 2025	Cardiovascular Events in Patients Treated with Sulfonylureas—A Target Trial Emulation. 295]	Alexander Turchin	• **Introduction:** Sulfonylureas are widely used in T2D, but their cardiovascular safety is uncertain. • **Methodology**: A target trial emulation using U.S. data (2013–2022) compared sulfonylureas (glimepiride, glipizide, glyburide) vs. DPP4i in T2D patients on metformin with moderate CV risk. Primary outcome: 5-year risk of MACE-4. • **Results:** Among 48,165 patients, glipizide had the highest CV risk (RR 1.13, 95% CI 1.03–1.23 vs. DPP4i). Glimepiride and glyburide showed no significant risk difference. • **Conclusions:** Glipizide was associated with higher CV event risk. It may be less suitable for T2D patients at elevated cardiovascular risk.

Notable Presentations At ADA 2025
Clinical Trials & Drug Development (1/5)

Date	Title	Author	Summary
20 June 2025	Baricitinib-Associated Changes in Single-Cell Gene Expression in NK Cells in the BANDIT Clinical Trial. 30]	Laura Sanz Villanueva	• **Introduction:** The BANDIT trial evaluated baricitinib in new-onset T1D, noting preserved C-peptide and immune modulation. This study further explored baricitinib's immunological effects. • **Methodology**: PBMCs from 30 baricitinib- and 18 placebo-treated patients were analyzed at baseline and week 24 via FACS and CITE-seq. DEG analysis used edgeR and Limma. • **Results:** CD56^dim and CD56^bright NK cells decreased post-baricitinib. In CD56^dim cells, 305 DEGs emerged vs. baseline, 17 vs. placebo. JAK-STAT genes (STAT4, SOCS2) were downregulated; migration-related genes were upregulated. • **Conclusions:** Baricitinib suppresses NK proliferation via JAK-STAT pathway inhibition, supporting its therapeutic role in T1D.
20 June 2025	Safety, Tolerability, Pharmacokinetics (PK), and Pharmacodynamics (PD) of a Dual GLP-1/GIP Receptor Agonist (HDM1005)—A Phase I, Randomized, Double-Blind, Placebo-Controlled, Single and Multiple Dose-Escalation Study. 142]	Junfang Xu	• **Introduction:** HDM1005 is a dual GLP-1R/GIPR agonist under investigation for obesity and T2D. • **Methodology**: Phase I SAD (n=64) and MAD (n=40) studies assessed subcutaneous HDM1005 (0.1–7 mg) vs. placebo in healthy and overweight participants for safety, PK/PD, and efficacy. • **Results:** HDM1005 was well tolerated; GI AEs were dose-dependent and mild. t½ ~3.5 days. Dose-proportional PK observed. Dose-dependent glucose AUC_{0-2h} and weight reductions (up to 10.29%) were achieved, with >5% weight loss in 87.5% of HDM1005 vs. 25% placebo. Lipid parameters improved. • **Conclusions:** HDM1005 shows favorable safety, metabolic, and weight-loss effects; Phase II trials are underway.

Notable Presentations At ADA 2025
Clinical Trials & Drug Development (2/5)

Date	Title	Author	Summary
20 June 2025	Efficacy and Safety of a Novel Dual GLP-1/GIP Receptor Agonist in Participants with Type 2 Diabetes Mellitus Up to 32 Weeks. 126]	Meifang Zeng	• **Introduction:** HRS9531 is a novel weekly dual GLP-1/GIP agonist showing promising early efficacy in T2DM. • **Methodology**: In a double-blind phase 2 trial, Chinese T2DM patients were randomized to HRS9531 (1–4.5 mg) or placebo, with a 20-week core and 12-week extension phase. Primary endpoint: HbA1c change at Week 20. • **Results:** At Week 32, HbA1c reduction ranged from −2.1% to −2.7%, with 91.7% of 4.5 mg group reaching HbA1c <7.0%. Weight loss was dose-dependent (−4.0% to −8.9%). BP, TG, and UACR improved. TEAEs were mostly mild; no severe hypoglycemia observed. • **Conclusions:** HRS9531 showed durable glycemic, weight, and cardio-renal benefits with good safety.
21 June 2025	Once-Weekly Insulin SHR-3167 in Healthy Subjects and Type 2 Diabetes Mellitus Participants—A Phase 1, Randomized, Single- and Multiple-Ascending Dose Study. 829]	Meifang Zeng	• **Introduction:** SHR-3167 is a novel once-weekly basal insulin evaluated for safety and efficacy in T2DM and healthy individuals. • **Methodology**: A Phase 1 trial included SAD (n=44) and MAD (n=18) parts. Doses ranged from 0.5–50 mg SC vs. placebo or insulin glargine. Primary endpoint: safety/tolerability • **Results:** AEs were mild; no serious events. SHR-3167 had a median Tmax of 3–5.5 days and t½ of 10.4–11.9 days. In T2DM, FPG dropped 2.1–2.3 mmol/L by Day 8; HbA1c reduced 0.60% (20 mg dose). • **Conclusions:** SHR-3167 was well tolerated and demonstrated sustained glycemic control, supporting further development as a weekly insulin.

Notable Presentations At ADA 2025
Clinical Trials & Drug Development (3/5)

Date	Title	Author	Summary
22 June 2025	A Phase 3 Evaluation of CAMP-Biased GLP-1 Analog Ecnoglutide vs. Dulaglutide in Adults with Type 2 Diabetes. 727]	Susan Xu	• **Introduction:** This study assessed ecnoglutide, a long-acting, cAMP-biased GLP-1 analog, in adults with T2D uncontrolled on metformin. • **Methodology**: In a 52-week, Phase 3 trial (n=623, China), patients were randomized to ecnoglutide (0.6 mg or 1.2 mg) or dulaglutide (1.5 mg). Primary endpoint: HbA1c change at Week 32. • **Results:** Ecnoglutide reduced HbA1c by 1.89–1.91% vs. 1.65% with dulaglutide (P≤0.0002), and led to superior weight loss and triglyceride reductions. Glycemic and weight effects persisted to Week 52. GI AEs were common but mostly mild. • **Conclusions:** Ecnoglutide showed superior efficacy over dulaglutide with a favorable safety profile in T2D.
22 June 2025	Safety, Tolerability, Pharmacokinetics, and Pharmacodynamics of HRS9531 Tablet, an Oral Dual GLP-1/GIP Receptor Agonist, in Healthy Participants—A Phase 1 Study. 797]	Xiaoling Yu	• **Introduction:** Oral HRS9531, a dual GLP-1/GIP agonist, may improve adherence vs. injectable form. This study evaluated its safety and dosing in healthy adults • **Methodology**: In SAD (n=32) and MAD (n=40), participants received HRS9531 tablets (3–50 mg single dose; 10 or 10/25 mg daily for 4 weeks). Primary endpoints: safety and tolerability. • **Results:** TEAEs were mild/moderate; common events were GI-related in SAD and hyperuricemia, nausea in MAD. No serious AEs or hypoglycemia. PK matched injectable; half-life ~168 hours. Weight loss reached 5.4% and glucose dropped dose-dependently. • **Conclusions:** Oral HRS9531 was safe, well-tolerated, and effective in reducing weight and glucose, supporting further development.

Notable Presentations At ADA 2025
Clinical Trials & Drug Development (4/5)

Date	Title	Author	Summary
22 June 2025	A Phase 1, Double-Blind, Placebo-Controlled Single- and Multiple-Ascending Dose Study of the Novel Lipidated IL-22 Receptor Agonist CK-0045 in Adults with and without Obesity. 851]	Martijn van de Bunt	• **Introduction:** CK-0045 is a long-acting IL-22 receptor agonist under development for metabolic diseases. • **Methodology**: In this Phase 1 trial, healthy participants (n=40) and those with obesity (n=36) received single or multiple SC doses of CK-0045 or placebo. Safety, PK, and exploratory efficacy were assessed. • **Results:** CK-0045 was safe and well tolerated up to 10 µg/kg (SAD) and 2.5 µg/kg (MAD). Most AEs were mild (dry skin, pruritus). Exposure increased dose-dependently. Weight loss showed exposure-dependent effects (−1.6% in highest tertile, p=0.04). Cholesterol reductions were observed. • **Conclusions:** CK-0045 demonstrated favorable safety and early metabolic signals, supporting further investigation.
22 June 2025	A Randomized, Double-Blind, Placebo-Controlled Phase 1 Study of Adiponectin Agonist (PEG)-BHD1028 in Subjects with Insulin Resistance. 878]	Pablo Lapuerta	• **Introduction:** Low adiponectin may drive insulin resistance; this first-in-human trial evaluated the adiponectin receptor agonist (PEG)-BHD1028. • **Methodology**: Overweight/obese adults with insulin resistance received SC (PEG)-BHD1028 in SAD (4–64 µg/kg) and 28-day MAD (8–32 µg/kg daily) cohorts. MMTT was used to assess metabolic response. • **Results:** (PEG)-BHD1028 was well tolerated. C-peptide AUC dropped −63% at 8 µg/kg vs +25% placebo (p<0.001). Glucose AUC declined significantly (p<0.001), with modest insulin AUC changes. No changes in weight or lipids observed. • **Conclusions:** (PEG)-BHD1028 improved postprandial glucose and c-peptide profiles, supporting continued development in insulin resistance.

Notable Presentations At ADA 2025
Clinical Trials & Drug Development (5/5)

Date	Title	Author	Summary
22 June 2025	A Phase 1 Study of ID110521156, a Small Molecule Glucagon-Like Peptide 1 Receptor Agonist, in Healthy Subjects. 1983]	In-Gyu Je	• **Introduction:** ID110521156 is a novel oral small-molecule GLP-1RA developed to overcome limitations of injectable peptide-based therapies. • **Methodology**: In a Phase 1 SAD trial (N=24), healthy subjects received single oral doses of ID110521156 or placebo. A separate crossover cohort (N=12) assessed food effects. • **Results:** Exposure increased dose-proportionally. GI-related TEAEs (nausea, vomiting) were most common, all mild to moderate; no serious AEs occurred. Food had minimal impact on AUC; Cmax was reduced by 36% with high-fat meals. • **Conclusions:** ID110521156 was well tolerated with favorable PK, supporting further development as an oral GLP-1RA.

Notable Presentations At ADA 2025 Diabetes (T1D & T2D) (1/8)

Date	Title	Author	Summary
20 June 2025	Treatment and Outcomes in Paediatric Type 1 Diabetes across Countries with Different Gross Domestic Products—Results from the Sweet Initiative. 19]	Sunil S Gupta	• **Introduction:** This study assessed how national GDP influences T1D management and outcomes in youth using SWEET registry data. • **Methodology**: Cross-sectional analysis of 54,285 individuals (<25 years) with T1D from 130 global centers (2022–2023), stratified by GDP level. Outcomes included HbA1c, BMI, insulin use, and diabetes technology access. • **Results:** Lower-GDP countries had poorer height z-scores, higher insulin needs, less technology use, and worse HbA1c (8.7%). CGM/pump/AID use was lowest in low-GDP settings. DKA was more common in high-GDP, while hypoglycemia was highest in low-GDP. • **Conclusions:** GDP strongly influences pediatric T1D outcomes and technology access; optimal metabolic control was paradoxically seen in middle-income countries.
20 June 2025	Improving Glycemia in Adolescents and Young Adults (AYA) with T1D—Results of One-Year RCT. 20]	Lori M Laffel	• **Introduction:** Adolescents and young adults (AYA) with T1D often experience poor glycemic control and diabetes distress (DD). The HAPPY T1D program aims to address both. • **Methodology**: In a 1-year trial (N=191, ages 14–25), participants received usual care or 12 monthly telehealth sessions. Outcomes included CGM-based time-in-range (TIR) and A1c, analyzed via mixed effects models. • **Results:** TIR improved significantly in the HAPPY T1D group by 3 months and persisted throughout the year, with ~430 additional TIR hours vs. control. A1c showed a downward trend but was not statistically significant. • **Conclusions:** HAPPY T1D improved TIR early and sustainably, highlighting its impact on glycemia and potential benefits for psychosocial health.

Notable Presentations At ADA 2025
Diabetes (T1D & T2D) (2/8)

Date	Title	Author	Summary
21 June 2025	Diabetes Self-Efficacy—Longitudinal Relationships with Diabetes Overall Self-Management, Medication Adherence, Diabetes Distress, and Glycemic Control in Adults with Type 2 Diabetes. 601]	Jeffrey S Gonzalez	• **Introduction:** Diabetes self-efficacy is linked to glycemic control, yet its mediating pathways remain unclear, especially in high-risk T2DM populations. • **Methodology**: In a trial of 812 underserved adults with uncontrolled T2DM, researchers examined 12-month HbA1c outcomes and assessed 6-month self-efficacy, adherence, distress, and self-management as mediators. • **Results:** Intervention significantly improved self-efficacy (+4.19 points; $p<0.001$). Medication adherence partially mediated the effect of baseline self-efficacy on 12-month HbA1c (indirect effect: −0.005; $p<0.001$), but self-management and distress did not. • **Conclusions:** Enhancing self-efficacy improves glycemic control via medication adherence, supporting targeted interventions in disadvantaged T2DM populations.
21 June 2025	Diabetes Distress Is Associated with Higher Risk of Hypoglycemia in Older Adults with Type 1 Diabetes in the AIDE Trial. 605]	Shafaq Raza Rizvi	• **Introduction:** T1D prevalence is rising in older adults, but little is known about diabetes distress (DD) and its clinical relevance in this population. • **Methodology**: In a post-hoc analysis of 82 adults ≥65 years with T1D, DD was assessed via T1-DDS. Participants were categorized by DD severity; CGM data were used to evaluate glycemia. • **Results:** 28% had moderate-severe DD; 36.5% had significant hypoglycemia distress. Higher DD was associated with more time spent <70 mg/dL, indicating increased hypoglycemia risk. • **Conclusions:** In older adults, DD correlates with hypoglycemia rather than hyperglycemia, highlighting a need for tailored psychological and glycemic support.

Notable Presentations At ADA 2025 Diabetes (T1D & T2D) (3/8)

Date	Title	Author	Summary
21 June 2025	Efficacy and Safety of Switching to Iglarlixi from Premix Insulin Regimen in Patients with T2DM—Real-World Experience. 814]	Chun Jui Huang	• **Introduction:** The Soli-SWITCH study evaluated real-world outcomes of switching from premix insulin to iGlarLixi (insulin glargine + lixisenatide) in T2DM patients • **Methodology**: 42 patients at Taipei Veterans Hospital (2020–2023) were assessed for glycemic outcomes (HbA1c, FPG) over 6 months. Insulin dosing, injection frequency, and HOMA-IR were also evaluated. • **Results:** HbA1c dropped from 8.5% to 7.86% overall; 29.7% achieved HbA1c <7.0%. Injection frequency and insulin dose decreased significantly. Patients with HOMA-IR improvement and baseline HbA1c ≥7.5% saw greater reductions. • **Conclusions:** Switching to iGlarLixi improved glycemic control, reduced treatment burden, and was well tolerated in real-world T2DM care.
21 June 2025	Efficacy and Hypoglycemia Outcomes with Once-Weekly Insulin Icodec vs. Once-Daily Basal Insulin in T2D by Diabetes Duration—ONWARDS 1–5. 816]	Alice YY Cheng	• **Introduction:** This post hoc analysis explored how diabetes duration influenced efficacy and hypoglycemia outcomes with once-weekly insulin icodec vs. once-daily (OD) basal insulin. • **Methodology**: Data were analyzed from ONWARDS trials 1–5, stratifying insulin-naive and experienced T2D patients by baseline diabetes duration (<5, 5–<10, 10–<15, ≥15 years). • **Results:** Icodec showed numerically greater A1c reduction across most duration subgroups. No significant interaction was found between treatment and diabetes duration for A1c change or achieving A1c <7% without hypoglycemia. Hypoglycemia rates were generally low. • **Conclusions:** Icodec efficacy and safety were consistent across diabetes duration subgroups, supporting its broad clinical use.

Notable Presentations At ADA 2025 Diabetes (T1D & T2D) (4/8)

Date	Title	Author	Summary
21 June 2025	Comparison of Pharmacodynamics and Pharmacokinetics of Insulin Aspart and Faster-Acting Insulin Aspart around Continuous Moderate Intensity Exercise in Adults with Type 1 Diabetes—A Randomised Controlled Trial. 826]	Richard M Bracken	• **Introduction:** This study evaluated pharmacokinetic (PK) and pharmacodynamic (PD) effects of reduced-dose insulin aspart vs. faster aspart around exercise in adults with T1D. • **Methodology**: In a randomized crossover trial (n=44), participants received 50% or 75% reduced-dose aspart or faster aspart with carbs, before and after 45 min of moderate cycling. PD (glucose) and PK (serum insulin) were monitored. • **Results:** Faster aspart led to higher serum insulin than aspart ($p<0.001$), but glucose reductions were similar between insulins. Greater glucose decline occurred with 50% vs. 75% dose arms ($p\leq0.05$). • **Conclusions:** Reduced aspart and faster aspart produced comparable glucose-lowering effects around exercise in T1D.
21 June 2025	Efficacy and Safety of Prandial Technosphere Inhaled Insulin (Afrezza) Compared with Placebo in Adult Individuals with T2DM—Results from a Phase III Clinical Trial from India. 833]	Manoj Chawla	• **Introduction:** This Phase 3 trial evaluated the efficacy and safety of Technosphere® insulin (TI), an inhaled insulin, in Indian adults with T2DM inadequately controlled on ≥2 oral drugs. • **Methodology**: In a 24-week, double-blind, placebo-controlled trial, 216 patients were randomized 2:1 to TI or placebo. Primary endpoint: HbA1c change at week 12. • **Results:** TI reduced HbA1c by 0.62% vs. 0.20% for placebo ($\Delta = -0.417\%$, $p=0.0124$). Hypoglycemia and cough were more common with TI but no discontinuations occurred. Lung function remained stable. • **Conclusions:** TI significantly improved glycemic control with good tolerability and no lung function decline, supporting its use in Indian T2DM patients.

Notable Presentations At ADA 2025 Diabetes (T1D & T2D) (5/8)

Date	Title	Author	Summary
21 June 2025	Real-World Efficacy of the iLet Bionic Pancreas in Users with Type 1 and Type 2 Diabetes during the First Eighteen Months of Commercial Availability. 947]	Steven J Russell	• **Introduction:** This study evaluated glycemic outcomes in commercial users of the iLet bionic pancreas over 18 months post-FDA clearance, including off-label use in T2D. • **Methodology**: Analysis included 6,992 users (T1D: 5,843; T2D: 1,012) with pre-iLet HbA1c and ≥3 weeks of iLet data. GMI, time <54 mg/dL, and insulin dose/kg were assessed. • **Results:** HbA1c dropped by 1.4% in T1D and 1.7% in T2D users. GMI was ~7.3% in both groups. Hypoglycemia time <54 mg/dL was minimal (T1D: 0.3%; T2D: 0.1%). • **Conclusions:** iLet improved glycemic control in both T1D and T2D with low hypoglycemia and similar insulin dosing across groups.
21 June 2025	The Application of Continuous Glucose Monitoring System as an Educational Tool in Newly Diagnosed Patients with Type 2 Diabetes—Preliminary Results from a Single-Center RCT. 971]	Magdalena Plonka-Stepien	• **Introduction:** This RCT aimed to assess whether short-term Freestyle Libre 2 CGM use improves glycemic control and quality of life in newly diagnosed T2DM patients. • **Methodology**: 31 patients were randomized to intervention or control arms. The primary endpoint was change in HbA1c after 12 months; QoL was a secondary outcome. • **Results:** At 12 months, HbA1c was 6.02% (intervention) vs. 5.97% (control), with no significant difference (p=0.852). QoL outcomes were also similar. • **Conclusions:** Short-term CGM use did not improve glycemic outcomes versus standard care, though both groups achieved excellent HbA1c control.

Notable Presentations At ADA 2025 Diabetes (T1D & T2D) (6/8)

Date	Title	Author	Summary
21 June 2025	Impact of Initiating Continuous Glucose Monitoring in People with Type 2 Diabetes Not on Insulin—A Randomized Controlled Trial. 234]	Holly J Willis	• **Introduction:** The study explored CGM initiation strategies—nutrition-focused (NFA) vs. self-directed (SDA)—to improve time in range (TIR) in adults with type 2 diabetes not on insulin (T2NI). • **Methodology**: 124 participants were randomized to NFA (n=64) or SDA (n=60) for a 2-month CGM intervention using Dexcom G7. Both arms received identical CGM training sessions. • **Results:** TIR improved significantly in both groups (+25% NFA, +16% SDA; p<0.001), with no intergroup difference. A1c and other CGM metrics improved; NFA showed minor dietary changes. • **Conclusions:** Both CGM approaches significantly enhanced TIR in T2NI without medication changes.
22 June 2025	Efficacy and Safety of HDG1901 vs. Ozempic in Patients with Type 2 Diabetes (T2D)—A Randomized, Open-Label, Bioequivalence Phase 3 Trial. 839]	June Xu	• **Introduction:** HDG1901, a biosimilar of semaglutide (Ozempic®), was evaluated for efficacy and safety in T2D patients. • **Methodology**: In a 32-week Phase 3 RCT (N=490), participants received weekly doses of HDG1901 or reference semaglutide. Primary endpoint: change in HbA1c. • **Results:** HbA1c reduction was −2.05% (HDG1901) vs −2.01% (semaglutide); treatment difference −0.038% within equivalence margin. Weight loss and adverse event profiles were similar. • **Conclusions:** HDG1901 demonstrated equivalent efficacy and tolerability to semaglutide, supporting its use as a T2D treatment biosimilar.

Notable Presentations At ADA 2025 Diabetes (T1D & T2D) (7/8)

Date	Title	Author	Summary
22 June 2025	Efficacy and Safety of Early Treatment Intensification Guided by Glycated Albumin in Newly Diagnosed Type 2 Diabetes—A Multicentre, Randomized Clinical Trial. 856]	Qian Ren	• **Introduction:** This RCT assessed whether GA-guided therapy improves glycemic control in newly diagnosed T2DM. • **Methodology**: 200 patients were randomized to GA-guided or standard therapy. Intensification occurred if GA >16% at week 4. Follow-up: 12 weeks. • **Results:** HbA1c <7% rates were similar (64.3% vs 64.4%). However, more in the GA group achieved HbA1c <6.5% (40.5% vs 25.3%, p=0.03). GA guidance improved HOMA-β, HOMA-IR, and weight. • **Conclusions:** GA-guided therapy did not raise HbA1c <7% rates but improved deeper glycemic control and metabolic markers without added hypoglycemia.
22 June 2025	A Multicenter, Randomized, Open-Label, Controlled Study on Evaluating the Efficacy and Safety of Switching from Daily DPP-4 Inhibitors to Cofrogliptin in Patients with Type 2 Diabetes Mellitus in China. 863]	Congqing Pan	• **Introduction:** Cofrogliptin is a biweekly DPP-4i with potential for stable glycemic control in T2D. • **Methodology**: 64 Chinese T2D patients were randomized to continue daily DPP-4i or switch to biweekly cofrogliptin for 24 weeks. 14-day CGM assessed glycemic variability. • **Results:** TIR improved with cofrogliptin (+0.55%) but declined with daily DPP-4i (−9.61%), LS mean difference 10.16% (p=0.005). Cofrogliptin also significantly reduced mean glucose and glycemic variability. No severe hypoglycemia reported. • **Conclusions:** Switching to cofrogliptin improved TIR, mean glucose, and stability over daily DPP-4i, with similar safety.

Notable Presentations At ADA 2025 Diabetes (T1D & T2D) (8/8)

Date	Title	Author	Summary
22 June 2025	Efficacy and Safety of a Novel Oral Small Molecule GLP-1RA in Chinese Obese Adults without Diabetes. 865]	Weijun Gu	• **Introduction:** HRS-7535 is a novel oral GLP-1RA evaluated for weight loss in obese adults without diabetes. • **Methodology**: 235 participants were randomized to HRS-7535 (30–180 mg QD) or placebo for 36 weeks. The primary outcome was % body weight (BW) change at week 26. • **Results:** At week 26, BW reductions ranged from –2.99% to –9.36% with HRS-7535 vs –2.5% with placebo. The 180 mg group showed the greatest effect (–6.87% vs placebo; p<0.0001). GI side effects were common but mostly mild. • **Conclusions:** HRS-7535 led to significant weight loss with an acceptable safety profile**.**

Notable Presentations At ADA 2025
Behavioral, Psychosocial & Lifestyle (1/4)

Date	Title	Author	Summary
21 June 2025	Increasing Sleep Duration among Short-Sleeping Type 2 Diabetes Patients via mHealth—A Pilot Randomized Controlled Trial. 631]	Ryohei Nakada	• **Introduction:** Sleep duration is linked to glycemic control in type 2 diabetes (T2D), but causal pathways remain unclear. This study aimed to assess whether promoting earlier bedtimes could improve both sleep and glycemic outcomes. • **Methodology**: A 12-week single-blind RCT enrolled 70 short-sleeping T2D patients in Japan (HbA1c ≥7.5%, ≤6h sleep, no sleep disorders). The intervention group received behavior-based mobile health guidance to advance bedtime. • **Results:** Intervention increased sleep by 32.8 minutes (p=0.004). HbA1c (↓0.11, p=0.51) and BMI (↓0.24, p=0.17) trends favored intervention but lacked significance. HbA1c SD exceeded projections. • **Conclusions:** mHealth-based bedtime intervention effectively extended sleep; larger studies are warranted to clarify metabolic impacts.
21 June 2025	Longitudinal Associations of Peer Support with Self-Efficacy, Depression, and Diabetes Management in Early Emerging Adults with Type 1 Diabetes. 650]	Emily Ellis	• **Introduction:** Peer support may aid T1D self-management, but past models risk undermining competence. • **Methodology**: In 186 emerging adults with T1D, annual surveys over four years assessed T1D-specific peer support, self-efficacy, depression, self-management, and HbA1c. • **Results:** Higher average peer support was linked to better self-efficacy (p<.001), self-management (p<.001), and lower depression (p=.02), but not HbA1c (p=.828). Yearly increases in support improved self-efficacy and behaviors. • **Conclusions:** Peer support that affirms competence improves psychosocial and behavioral outcomes in emerging adults with T1D, though glycemic control remains unaffected.

Notable Presentations At ADA 2025
Behavioral, Psychosocial & Lifestyle (2/4)

Date	Title	Author	Summary
21 June 2025	Enhancing Diabetes Self-Management—Feasibility and Impact of a Culturally Tailored Program for Black Adults Using an Embedded Mixed Methods Pilot Implementation Trial. 651]	Olayinka Shiyanbola	• **Introduction:** Low DSMES uptake among Black adults is linked to cultural and systemic barriers. • **Methodology**: Two 6-week culturally tailored DSMES programs were co-designed and delivered by trained Black facilitators. Mixed methods evaluated feasibility, implementation, and outcomes at baseline and 6 months. • **Results:** Among 32 participants (87% female, mean age 57), significant gains were seen in self-reported health, engagement (↑83%), and empowerment (↑20%). Self-care behaviors improved. Participants valued cultural relevance; satisfaction scored 4.2/5. • **Conclusions:** Culturally tailored DSMES improved engagement and self-care, with high feasibility. Broader adoption requires leadership backing and sustained funding.
21 June 2025	A Guided Self-Determination Intervention vs. an Attention Control Group of People with Type 2 Diabetes in an Outpatient Clinic Setting—A Randomised Clinical Trial. 667]	Anne S Mathiesen	• **Introduction:** Guided self-determination (GSD) may reduce diabetes distress; this trial evaluated its effect in adults with type 2 diabetes. • **Methodology**: In a dual-centre RCT (n=150), participants were randomized to GSD or attention control. Outcomes included diabetes distress, depression, quality of life, and adverse events over 12 months. • **Results:** GSD significantly reduced diabetes distress (MD -5.83, p=0.007) and depression (MD -2.77, p=0.005). Attention control improved mental quality of life (MD 8.10, p=0.005). No group differences in physical quality of life or adverse events. • **Conclusions:** GSD effectively reduces distress and depression; attention control may enhance mental well-being.

Notable Presentations At ADA 2025
Behavioral, Psychosocial & Lifestyle (3/4)

Date	Title	Author	Summary
23 June 2025	Problem-Solving and Text Messaging Interventions to Improve Diabetes-Related Psychosocial Outcomes in Teens with Type 1 Diabetes (T1D)—A Randomized Controlled Trial (RCT). 1217]	Lori M Laffel	• **Introduction:** Teens with T1D face psychosocial challenges; this study tested behavioral and text-based interventions. • **Methodology**: In a 12-month RCT (n=284, age 13–17), teens were randomized to Teenwork (TW), text messaging (TX), TW+TX, or usual care. Psychosocial outcomes were assessed via validated surveys. • **Results:** TX significantly reduced negative emotional responses to blood glucose checks (MD -6.42, p=0.004). No other psychosocial benefits were seen with TX or TW. • **Conclusions:** Text reminders improved emotional response to BG checks, suggesting enhanced teen autonomy. TW showed no significant psychosocial impact.
23 June 2025	Reducing Diabetes Distress Leads to Positive Glycemic Change—Results from the EMBARK Trial. 298]	Lawrence Fisher	• **Introduction:** This study explored whether reducing diabetes distress (DD) improves HbA1c through enhanced emotional and problem-solving skills. • **Methodology**: Adults with T1D (n=276) and elevated DD/HbA1c were randomized to StreamLine, TunedIn (ACT-based), or FixIt (combined). A 4-stage model (DD → emotion → problem solving → HbA1c) was tested over 12 months. • **Results:** All arms improved, but TunedIn and FixIt showed greater DD, emotional, and problem-solving gains. StreamLine and TunedIn improved HbA1c more than FixIt. The 4-stage pathway was validated; alternatives fit worse. • **Conclusions:** TunedIn was most effective overall. DD reduction drives glycemic improvement via sequential emotional and cognitive change.

Notable Presentations At ADA 2025
Behavioral, Psychosocial & Lifestyle (4/4)

Date	Title	Author	Summary
23 June 2025	Financial Incentives and Nurse Coaching to Enhance Diabetes Outcomes—A Randomized Controlled Trial. 302]	Leonard E Egede	• **Introduction:** This study evaluated whether financial incentives plus nurse coaching improve glycemic control in adults with type 2 diabetes. • **Methodology**: In a 450-person RCT, FINANCE-DM (education, telemonitoring, financial incentives) was compared to active control (education + telemonitoring). Incentives targeted behavior and HbA1c reduction. • **Results:** At 6 months, HbA1c dropped 1.30% in FINANCE-DM vs. 0.93% in control. The cohort was diverse by race, income, and insurance. • **Conclusions:** Financial incentives yielded a clinically meaningful HbA1c reduction (>1%) in a socioeconomically diverse population, supporting their potential in diabetes care.

Notable Presentations At ADA 2025
Health Equity, Disparities & Systems (1/3)

Date	Title	Author	Summary
21 June 2025	Control of the Cardiovascular Risk Factors in Patients with Type 2 Diabetes Mellitus in China—Results from iCaReMe China Registry. 1486]	Wenjia Yang	• **Introduction:** China faces a growing T2DM epidemic; real-world data are needed to guide care. • **Methodology**: The iCaReMe China Registry is a prospective, multicenter study enrolling adults with T2DM (July 2023–March 2024). • **Results:** Among 9,000 patients, mean HbA1c was 8.5%. Only 36.5% achieved HbA1c <7%, and just 9.6% met all 3 targets (glucose, blood pressure, lipids). Hypertension and dyslipidemia were common. • **Conclusions:** Comprehensive T2DM management in China is suboptimal. There is an urgent need for better integration of cardiorenal protective therapies to improve outcomes.
21 June 2025	Insights from 1,062 Clinicians—Evaluating the Efficacy and Clinical Utility of Empagliflozin-Linagliptin Combination Therapy in T2DM Management. 1491]	Shankha Shubhra Sen	• **Introduction:** The empagliflozin-linagliptin combo is effective for glycemic, CV, and renal outcomes in T2DM. • **Methodology**: The EMBRACE survey (Nov–Dec 2024) included 1,062 Indian clinicians evaluating efficacy and preferences. • **Results:** 94% found the combo more effective than other SGLT2i/DPP4i options. Top use cases: uncontrolled HbA1c, CV/renal risk, and multi-need patients. Over 50% rated it "extremely important" in T2DM care. • **Conclusions:** Clinician consensus supports empagliflozin-linagliptin as a highly effective, preferred option for comprehensive T2DM management.

Notable Presentations At ADA 2025
Health Equity, Disparities & Systems (2/3)

Date	Title	Author	Summary
22 June 2025	Can Online CME Curriculum Impact Screening and Diagnosis of Cushing Syndrome in People with T2D? Results at Baseline and Immediately Post-education. 1084]	Amy Larkin	• **Introduction:** Study evaluated CME's impact on improving Cushing syndrome screening in difficult-to-control T2D. • **Methodology**: Three educational modules assessed pre- and post-activity competence, confidence, and planned practice changes. • **Results:** Among 1,881 learners, 46% improved screening competence; 175% increase in confidence. Around 30% of PCPs, D/Es, and NPs/PAs intended to screen more frequently. • **Conclusions:** CME significantly improved awareness and intent to screen for hypercortisolism in challenging T2D cases. Performance impact to follow.
22 June 2025	Physician Referral Pathway to a Commercially Marketed Digital Exercise Resource for Type 1 Diabetes—Implementation Metrics from a Clinical Trial. 1109]	James Lukasik	• **Introduction:** Study assessed feasibility of obtaining PCP-issued exercise prescriptions for a trial using digital coaching in T1D/LADA adults. • **Methodology**: PCPs of 26 participants received a 3-item form to confirm readiness and specify intensity/special considerations. • **Results:** 88% of PCPs responded; most endorsed vigorous or tolerance-based exercise. Few noted specific precautions. • **Conclusions:** Soliciting exercise prescriptions from PCPs is feasible and should be integrated into digital exercise initiatives.

Notable Presentations At ADA 2025
Health Equity, Disparities & Systems (3/3)

Date	Title	Author	Summary
22 June 2025	Eliminating Barriers to Diabetes Care—An Interprofessional Approach to Improving Outcomes through Self-Efficacy and Addressing Social Determinants of Health. 1155]	Danielle C. Ezzo	• **Introduction:** The Eliminating Barriers Initiative (EBI) supports underserved, high-risk diabetes patients using interprofessional care. • **Methodology**: Patients with HbA1c >9% or provider-identified SDH barriers were enrolled; no exclusion criteria applied. • **Results:** Among 218 patients (48% Medicaid, 30% uninsured), mean A1c dropped from 10.7% to 8.9% (p<.01). Ethnic diversity was high; retention was strong. • **Conclusions:** EBI improved glycemic control and engagement. Addressing social needs via coordinated care may reduce disparities and enhance diabetes outcomes.
22 June 2025	Racial/Ethnic Distribution of People with Diabetes and Diabetes Center Staff—2024 T1D Exchange Quality Improvement Collaborative (T1DX-QI) Survey Results. 2053]	Dhruvi Vora	• **Introduction:** The T1D Exchange QI Collaborative surveyed diabetes centers to evaluate care demographics and improvement efforts. • **Methodology**: A 2024 survey captured 2023 data from 56 of 62 invited pediatric and adult centers. • **Results:** Centers cared for ~92K PwT1D and ~89K PwT2D. Pediatric centers reported >50% of PwT2D as minoritized; <50% of staff identified similarly. • **Conclusions:** A racial/ethnic mismatch exists between patients and staff, especially in pediatric PwT2D care. Addressing this may enhance equity and outcomes.

Notable Presentations At ADA 2025
Obesity & Weight Management (1/10)

Date	Title	Author	Summary
21 June 2025	Weight Reduction Mediated by Antiobesity Medications and the Risk of Obesity-Associated Cancer—A Meta-analysis of Randomized Controlled Trials. 1723]	Chu Lin	• **Introduction:** Obesity is a known cancer risk factor; this study assessed whether AOM-induced weight loss reduces that risk. • **Methodology**: Meta-analysis of 54 RCTs (n=90,900) evaluated AOM impact on 13 obesity-related cancers using RR estimates. • **Results:** AOM-driven 5 kg weight loss showed no reduction in overall or individual cancer risks (RR = 0.99; 95% CI: 0.86–1.13). Subgroup analyses confirmed consistency. • **Conclusions:** AOM-induced weight loss did not reduce obesity-associated cancer risk. Further studies are warranted.
21 June 2025	Efficacy and Safety of Semaglutide 7.2 mg in Obesity—STEP UP Trial. 1966]	Sean Wharton	• **Introduction:** This study evaluated the efficacy and safety of semaglutide 7.2 mg in adults with obesity. • **Methodology**: In a 72-week RCT (N=1407), adults with BMI ≥30 kg/m² were randomized to sema 7.2 mg, 2.4 mg, or placebo with lifestyle support. • **Results:** Semaglutide 7.2 mg led to 18.7% weight loss vs 15.6% (2.4 mg) and 3.9% (placebo; p<0.001). Waist circumference decreased significantly. GI AEs occurred in 71% (7.2 mg) vs 61% (2.4 mg) and 43% (placebo). • **Conclusions:** Semaglutide 7.2 mg provided superior weight loss over 2.4 mg and placebo with manageable tolerability.

Notable Presentations At ADA 2025
Obesity & Weight Management (2/10)

Date	Title	Author	Summary
21 June 2025	A Phase 3 Evaluation of CAMP-Biased GLP-1 Analog Ecnoglutide in Adults with Overweight or Obesity. 164]	Linong Ji	• **Introduction:** Ecnoglutide, a cAMP-biased long-acting GLP-1 analog, was evaluated for weight reduction. • **Methodology**: In a 48-week phase 3 trial (N=664), adults with overweight or obesity were randomized to ecnoglutide (1.2, 1.8, 2.4 mg) or placebo. • **Results:** Ecnoglutide led to 9.9–15.4% weight loss vs 0.3% (placebo; p<0.0001). Up to 92.8% achieved ≥5% weight loss. Cardiometabolic markers improved. AE incidence was similar to GLP-1 class, mostly GI and transient. • **Conclusions:** Weekly ecnoglutide significantly reduced bodyweight and improved metabolic outcomes with acceptable safety.
22 June 2025	HDM1002 in Chinese Adults with Overweight or Obesity—A Randomized, Placebo-Controlled, Four-Week, Phase 1b Study. 737]	June Xu	• **Introduction:** HDM1002 is an oral non-peptide GLP-1 receptor agonist developed for weight management. • **Methodology**: In a 4-week phase 1b trial, overweight/obese adults (N=60) received HDM1002 (50–400 mg) or placebo. • **Results:** HDM1002 caused dose-dependent weight loss (–4.3 to –6.1 kg). TEAEs were mostly mild/moderate GI-related (nausea: 54%, vomiting: 30%). No serious AEs reported. PK was favorable with proportional Cmax and slightly supra-proportional AUC. • **Conclusions:** HDM1002 showed good tolerability and promising early weight loss, supporting further development for obesity treatment.

Notable Presentations At ADA 2025
Obesity & Weight Management (3/10)

Date	Title	Author	Summary
22 June 2025	Efficacy and Safety of Efsubaglutide Alfa in Patients with Obesity or Overweight—A Phase 2 Study. 738]	Yulong Xu	• **Introduction:** Efsubaglutide Alfa (Suba) is a novel long-acting GLP-1RA for weight management. • **Methodology**: In a placebo-controlled trial (N=50), overweight/obese participants received escalating doses of Suba or placebo for 4 weeks. • **Results:** Suba led to 7.2% weight loss vs 0.9% with placebo. 84.6% achieved ≥5% weight loss (vs 0% PBO). Fat mass decreased 4.5 kg; muscle-to-fat ratio rose 19.7%. GI AEs were mild/moderate; no SAEs. • **Conclusions:** Suba induced substantial short-term weight loss with good safety, supporting further clinical development.
22 June 2025	Efficacy and Safety of VCT220 in Chinese Adults with Overweight or Obesity. 743]	Linong Ji	• **Introduction:** VCT220 is a novel oral GLP-1RA for obesity treatment. • **Methodology**: In a 16-week phase 2 study, 250 overweight/obese Chinese adults received VCT220 (80/120/160 mg) or placebo. • **Results:** VCT220 significantly reduced body weight, waist circumference, and blood pressure vs placebo. ≥5% and ≥10% weight loss rates were higher in all VCT220 arms. GI-related AEs were mild/moderate; no serious AEs. • **Conclusions:** VCT220 was safe, well tolerated, and produced meaningful weight and cardiometabolic improvements, supporting continued development.

Notable Presentations At ADA 2025
Obesity & Weight Management (4/10)

Date	Title	Author	Summary
22 June 2025	Efficacy and Safety of BGM0504 in Chinese Patients with Obesity—A Multicenter, Randomized, Double-Blind, Placebo-Controlled Phase 2 Trial. 744]	Linong Ji	• **Introduction:** BGM0504 is a dual GLP-1/GIP receptor agonist for obesity. • **Methodology**: In a 24-week study, 120 Chinese adults with obesity received BGM0504 (5, 10, or 15 mg) or placebo weekly. • **Results:** Weight loss reached −10.8%, −16.2%, and −19.8% for 5, 10, and 15 mg doses, respectively. ≥20% loss was achieved in 10/15 mg arms. Waist circumference and blood pressure also improved ($p < 0.05$). Tolerability was favorable. • **Conclusions:** BGM0504 induced robust weight loss and cardiometabolic benefits, supporting its potential as a treatment for obesity.
22 June 2025	Efficacy and Safety of RAY1225 Once Every Two Weeks in Chinese Adults with Obesity or Overweight (REBUILDING-1). 745]	Linong Ji	• **Introduction:** RAY1225 is a novel GLP-1/GIP dual agonist dosed once every two weeks. • **Methodology**: In a 24-week phase 2 trial, 132 Chinese adults with overweight/obesity received 3–9 mg RAY1225 or placebo. • **Results:** Mean weight loss ranged from −10.1% (3 mg) to −13.1% (9 mg) vs −3.6% placebo ($p<0.001$). ≥5% weight loss was achieved in up to 95.1% of RAY1225 participants. GI-related AEs were common but mild/moderate. • **Conclusions:** RAY1225 showed robust weight reduction, good tolerability, and potential for biweekly obesity treatment.

Notable Presentations At ADA 2025
Obesity & Weight Management (5/10)

Date	Title	Author	Summary
22 June 2025	Safety, Tolerability, PK, and Efficacy of MET097—A Next-Generation Nutrient-Stimulated Hormone Peptide Analog for Chronic Weight Management. 753]	Steven P Marso	• **Introduction:** MET097 is a fully biased, ultra-long acting GLP-1RA designed for sustained weight loss. • **Methodology**: In a Phase 1 SAD/MAD study, adults with overweight/obesity received weekly MET097 (0.2–1.6 mg) SC without titration for 5 weeks. • **Results:** No AE-related discontinuations occurred. GI AEs were mild. MET097 showed linear PK ($t_{1/2} \approx 360$ hrs) and induced dose-dependent weight loss sustained up to 8 weeks post-treatment. • **Conclusions:** MET097 was well tolerated and produced prolonged, clinically meaningful weight loss, supporting further development for weekly or monthly dosing.
22 June 2025	Glycemic Control, Weight Reduction, and Safety with CT-388, a Signal-Biased Dual GLP-1/GIP Receptor Agonist—Results from a 12-Week Cohort in Adults with Obesity and Type 2 Diabetes. 763]	Manu Chakravarthy	• **Introduction:** CT-388, a dual agonist, previously showed 18.8% placebo-adjusted weight loss (WL) in obesity. This cohort assessed effects in type 2 diabetes (T2D). • **Methodology**: Adults with obesity and T2D were randomized (4:1) to CT-388 22 mg or placebo for 12 weeks. Endpoints: %WL, HbA1c, and AEs. • **Results:** CT-388 achieved placebo-adjusted WL of 7.4% and HbA1c reduction of 2.8%. All patients reached ≥5% WL; 100% reached HbA1c ≤6.5%, 50% <5.7%. AEs were mild, mainly GI. • **Conclusions:** CT-388 produced rapid glycemic normalization and substantial WL in T2D, with a favorable safety profile. Phase 2 underway.

Notable Presentations At ADA 2025
Obesity & Weight Management (6/10)

Date	Title	Author	Summary
22 June 2025	First Report on the Small Molecule Oral GLP-1 Receptor Agonist RGT-075 in Obesity—A Randomized, Placebo-Controlled Phase 2a Proof-of-Concept Twelve-Week Study. 785]	Julio Rosenstock	• **Introduction:** RGT-075 is a novel, oral small-molecule GLP-1RA under investigation for obesity. • **Methodology**: In a 12-week phase 2a trial, 73 non-diabetic adults with obesity were randomized to RGT-075 or placebo. Primary endpoint: % body weight reduction. • **Results:** RGT-075 led to –5.4% weight loss vs –0.45% with placebo ($p<0.0001$). Systolic/diastolic BP fell by 10.8/4.9 mmHg. Nausea (40%) and vomiting (24%) were mild/moderate. No serious AEs; 4% discontinued in both arms. • **Conclusions:** RGT-075 achieved significant weight and BP reductions with a favorable safety profile, supporting continued development.
22 June 2025	A Twelve-Week Trial of MET097—A Potent and Ultra-Long-Acting GLP-1 Receptor Agonist. 788]	Robert Stoekenbroek	• **Introduction:** MET097 is a fully biased, ultra-long-acting GLP-1RA designed for obesity treatment. • **Methodology**: In a 12-week Phase 2 trial, adults with BMI 27–38 kg/m² were randomized to once-weekly MET097 (various doses or dose-escalation) or placebo. Primary endpoint: % weight change at Day 85. • **Results:** Among 120 participants, MET097 achieved –6.3% to –11.3% greater weight loss vs placebo. GI AEs were mostly mild/moderate. The dose-escalation group had improved tolerability (nausea 5%, vomiting 10%). • **Conclusions:** Weekly MET097 produced robust weight loss with favorable tolerability, including without titration.

Notable Presentations At ADA 2025
Obesity & Weight Management (7/10)

Date	Title	Author	Summary
22 June 2025	The Use of Antiobesity Medications and the Increased Risk of Alopecia—A Meta-analysis of Randomized Controlled Trials. 789]	Ruoyang Jiao	• **Introduction:** Alopecia is a possible adverse event of anti-obesity medications (AOMs), possibly linked to nutrient loss and stress from rapid weight loss. • **Methodology**: A meta-analysis of 10 RCTs (n=22,840) examined the risk of alopecia with AOM use. • **Results:** AOMs were associated with higher alopecia risk (OR=3.12). The risk was greater in individuals with obesity (OR=3.89). Meta-regression showed increased weight loss and younger age correlated with higher risk. • **Conclusions:** AOMs may elevate alopecia risk, particularly with substantial weight loss. Clinicians should monitor hair health during intensive obesity therapy.
22 June 2025	Eloralintide, a Selective, Long-Acting Amylin Receptor Agonist for Obesity—Phase 1 Proof of Concept. 882]	Edward J Pratt	• **Introduction:** Eloralintide (Elora), a weekly amylin receptor agonist, is designed for obesity treatment with minimal calcitonin activity. • **Methodology**: A 12-week phase 1, randomized, placebo-controlled trial evaluated Elora's safety, PK, and weight effects in 100 participants. • **Results:** Elora showed dose-proportional PK and a half-life of ~14–16 days. Common AEs included decreased appetite (19%) and headache (12%). GI AEs were minimal. Weight loss ranged from −2.6% to −11.3%. • **Conclusions:** Elora was well tolerated with low GI burden and promising weight loss. Phase 2 studies are underway to confirm efficacy (NCT06230523).

Notable Presentations At ADA 2025
Obesity & Weight Management (8/10)

Date	Title	Author	Summary
22 June 2025	Efficacy of Antiobesity Agents on Fat Distribution—A Systematic Review and Network Meta-analysis of Randomized Controlled Trials. 890]	Xiuqi Qiao	• **Introduction:** Fat distribution impacts obesity-related risk. This study assessed how anti-obesity drugs affect visceral (VAT) and subcutaneous fat (SAT). • **Methodology**: A network meta-analysis of 41 RCTs (n=2,741) evaluated the effects of GLP-1RAs, SGLT-2 inhibitors, metformin, and naltrexone-bupropion on VAT, SAT, weight, and waist circumference. • **Results:** GLP-1RAs significantly reduced VAT (-0.90) and SAT (-1.01). SGLT-2 inhibitors also lowered VAT (-0.66). GLP-1RAs, SGLT-2 inhibitors, metformin, and naltrexone-bupropion all significantly reduced weight and waist circumference. • **Conclusions:** GLP-1RAs showed the broadest fat-reducing effects. SGLT-2 inhibitors primarily reduced VAT, aiding personalized obesity pharmacotherapy.
22 June 2025	MWN109—A Novel Fatty Acid–Modified GLP-1/GIP/GCG Triagonist for Dual-Format Weight Management Demonstrates Superior Efficacy in Nonhuman Primates. 1967]	Wen-Xin Song	• **Introduction:** MWN109 is a novel GLP-1/GIP/GCG triagonist engineered for SC and oral delivery to enhance bioavailability. • **Methodology**: Efficacy was evaluated in DIO monkeys vs tirzepatide and retatrutide; oral PK was assessed in cynomolgus monkeys. A 10-week safety study examined cardiovascular effects. • **Results:** MWN109 showed superior weight loss at lower doses (26.6% vs tirzepatide 22.7%) and better lean mass preservation vs retatrutide. Oral administration achieved systemic exposure. Minimal heart rate increase was noted. • **Conclusions:** MWN109 demonstrates potent weight loss, favorable oral PK, and good safety. SC formulation is in Phase 1 trials following FDA and NMPA IND clearance.

Notable Presentations At ADA 2025
Obesity & Weight Management (9/10)

Date	Title	Author	Summary
22 June 2025	Amycretin, a Novel, Unimolecular GLP-1 and Amylin Receptor Agonist—Results of a Phase 1b/2a Clinical Trial. 2002]	Ania M Jastreboff	• **Introduction:** Amycretin is a novel once-weekly subcutaneous GLP-1/amylin dual agonist for obesity. • **Methodology**: In a phase 1 trial (n=125), safety, PK, and weight effects of SAD and MAD regimens (up to 60 mg) were assessed over 20–36 weeks in adults with BMI 27–39.9 kg/m². • **Results:** Amycretin was well tolerated with mostly mild/moderate GI adverse events. Dose-proportional increases in AUC/Cmax were observed. Dose-dependent weight reductions were significant: -24.3% (60 mg), -22.0% (20 mg), -16.2% (5 mg), and -9.7% (1.25 mg) vs placebo. • **Conclusions:** Amycretin demonstrated robust, dose-dependent weight loss with an acceptable safety profile.
23 June 2025	Long-Term Safety and Efficacy of Once-Weekly Dosage of 2.4 mg Semaglutide for Weight Loss in Patients with and without Diabetes—An Updated Systematic Review and Meta-analysis of Randomized Controlled Trials. 1745]	Mian Muhammad Salman Aslam	• **Introduction:** Semaglutide 2.4 mg weekly is widely used for obesity but requires clearer long-term efficacy and safety assessment. • **Methodology**: This meta-analysis of 12 RCTs (n=23,600) compared semaglutide to placebo in people with/without diabetes. Outcomes included weight loss, metabolic markers, and adverse events. • **Results:** Semaglutide led to -7.91% weight loss and -10.4 kg absolute reduction ($p<0.01$), with significant improvements in glucose, lipids, and waist circumference. GI side effects were higher (RR=1.56), with greater discontinuation rates (RR=4.67). • **Conclusions:** Semaglutide is effective for weight loss and metabolic improvements, though tolerability limits long-term adherence.

Notable Presentations At ADA 2025
Obesity & Weight Management (10/10)

Date	Title	Author	Summary
23 June 2025	Metabolic Benefits of Plant-Based Caloric Restriction Diets in Obesity Management—A Twelve-Week Randomized Controlled Trial. 1747]	Kelibinuer Mutailipu	• **Introduction:** Plant-Based Caloric Restriction Diets (PB-CRD) may offer metabolic advantages over conventional Calorie-Restricted Diets (CRD) in obesity. • **Methodology**: In a 12-week trial (n=80), PB-CRD ('5+2' pattern) was compared with daily CRD in obese adults (BMI ≥28). • **Results:** Both groups lost weight (PB-CRD: −6.56 kg; CRD: −5.11 kg); difference not significant. PB-CRD improved body fat %, glucose metabolism (HOMA-IR, Matsuda index), and total cholesterol more than CRD. • **Conclusions:** PB-CRD is as effective as CRD for weight loss and may provide added metabolic benefits, supporting its use in obesity management.
23 June 2025	Effects of the Novel Long-Acting Amylin Analogue Petrelintide on Body Weight and Waist Circumference by Sex in a Phase 1 Trial. 1773]	Tim Heise	• **Introduction:** GLP-1RAs may induce greater weight loss in women. This post hoc analysis explored sex-based effects of petrelintide. • **Methodology**: In a 16-week phase 1 trial (N=48), overweight/obese participants (79% men) received petrelintide or placebo. Weight and waist circumference (WC) changes were assessed by sex. • **Results:** Petrelintide led to dose-dependent weight loss (4.8–8.6%) vs. 1.7% for placebo. WC reductions were also greater (5.0–7.6 cm vs. 1.9 cm). Women had consistently superior responses. GI AEs were infrequent. • **Conclusions:** Petrelintide showed favorable tolerability and efficacy, with enhanced weight loss in women. A phase 2 trial is underway.

Notable Presentations At ADA 2025 Technology & Devices (1/3)

Date	Title	Author	Summary
20 June 2025	Real-World Efficacy of the iLet Bionic Pancreas in Adults and Children during the First Eighteen Months of Commercial Availability. 129]	Steven J Russell	• **Introduction:** This study evaluated glycemic outcomes with the iLet bionic pancreas post-FDA clearance versus the Bionic Pancreas Pivotal Trial (BPPT). • **Methodology**: Adults and children using iLet were analyzed separately. GMI from CGM was compared with baseline HbA1c. BPPT data served as the comparator. • **Results:** In commercial use, HbA1c reductions were greater than in BPPT: -1.4% vs. -0.7% in adults and -1.8% vs. -0.7% in children. Time <54 mg/dl was low and similar across groups (median ~0.3%). • **Conclusions:** iLet use resulted in larger HbA1c improvements in real-world settings vs. BPPT, with similar hypoglycemia risk.
21 June 2025	Automated Insulin Delivery vs. Open-Loop Insulin Delivery during Ramadan in Patients with Type 1 Diabetes in Saudi Arabia—The Hybrid-Ram Randomized Controlled Trial. 926]	Mohammed Almehthel	• **Introduction:** This trial evaluated AID systems vs open-loop insulin delivery (OLID) in type 1 diabetes patients fasting during Ramadan. • **Methodology**: T1D participants using either M780 or TCIQ AID systems were compared with those using OLID. Outcomes included Time in Range (TIR), Time Below/Above Range (TBR/TAR), and a Ramadan-specific glycemic composite. • **Results:** AID systems (M780, TCIQ) improved TIR and reduced TBR vs OLID. Both systems supported safer fasting with better glycemic control. • **Conclusions:** AID systems provided superior glycemic outcomes and improved safety during Ramadan fasting for individuals with T1D.

Notable Presentations At ADA 2025 Technology & Devices (2/3)

Date	Title	Author	Summary
21 June 2025	Unlocking the Predictors of Improved Time in Range for Users of Automated Insulin Delivery Systems during Ramadan Fasting—Findings from the Hybrid-Ram Randomized Controlled Trial. 927]	Mohammed Almehthel	• **Introduction:** This trial assessed predictors of improved glycemic control during Ramadan fasting in individuals with type 1 diabetes (T1D) using automated insulin delivery (AID) systems. • **Methodology**: This trial assessed predictors of improved glycemic control during Ramadan fasting in individuals with type 1 diabetes (T1D) using automated insulin delivery (AID) systems. • **Results:** AID significantly improved TIR (72.6% vs 55.8%), reduced TBR and TAR ($p<0.001$). Only changes in fructosamine levels predicted TIR improvement ($p=0.031$); age, sex, HbA1c, and diabetes duration did not. • **Conclusions:** Fructosamine change was the sole predictor of TIR improvement with AID during Ramadan fasting.
21 June 2025	Transition of Persons over 65 Years of Age with Type 1 Diabetes to the MiniMed 780G System—Preliminary Results from a Six-Month, Single-Center Prospective Randomized Study. 948]	Bartłomiej Matejko	• **Introduction:** This study evaluated the MiniMed™ 780G AHCL system's efficacy and safety in adults over 65 with type 1 diabetes. • **Methodology**: Thirty T1DM patients were randomized to AHCL or control. Glycemic metrics were assessed over 6 months using CGM; quality of life and physiological data will follow at 12 months. • **Results:** In the AHCL group (mean age 68.1), Time in Range improved from 59.8% to 80.1% by 3 months and sustained through 6 months ($p<0.001$). Time Above Range declined significantly; no increase in hypoglycemia was seen. No serious adverse events reported. • **Conclusions:** The AHCL system markedly improved glycemic control in older adults with long-duration T1DM.

Notable Presentations At ADA 2025 Technology & Devices (3/3)

Date	Title	Author	Summary
21 June 2025	Evaluating the Accuracy of a Novel AI-powered Optical Device for Noninvasive Glucose Monitoring—Results from a Prospective Clinical Study. 1027]	Dimiter Avtanski	• **Introduction:** Non-invasive glucose monitoring could address adherence issues associated with finger-stick tests. • **Methodology**: A prospective study assessed a novel optical sensor–AI prototype in 805 individuals, comparing its performance to standard finger-stick testing. MARD and regression analyses were used for validation. • **Results:** The device showed 89.8% and 74.0% agreement within ±15 mg/dL or ±15% for glucose ≤100 and >100 mg/dL, respectively. Overall MARD was 9.84%. Discrepancies correlated significantly with HbA1c and estimated average glucose ($p < 0.02$). • **Conclusions:** The prototype demonstrated strong accuracy at lower glucose levels, supporting its potential for non-invasive, AI-enabled diabetes monitoring.

Key Industry Sponsored Sessions Information

ADA 2025 Key Industry Sponsored Sessions Information (1/4)

Date	Sponsor	Title
20 June 2025	AstraZeneca	Expanding Obesity Therapeutic Options—Preclinical Studies
20 June 2025	Oregon Health	Family Dynamics and Psychosocial Interventions in Youth with Type 1 Diabetes—Addressing Health Disparities and Enhancing Outcomes
20 June 2025	AdventHealth	Not Just a Consequence of Glycemic Management—The Multifaceted Harms of Treatment-Induced Hypoglycemia
20 June 2025	Biomed Industries.	Incretin-Based Combination Therapies for Obesity—Clinical Studies
20 June 2025	Allarta Life Science	Innovation and Progress in Stem Cell–Derived Islet-Cell Replacement Therapy
20 June 2025	Genentech	Medications Effects on the Kidney, Liver, and Epicardium in Diabetes
20 June 2025	Beta Bionics	Real-World Automated Insulin Delivery System Results

ADA 2025 Key Industry Sponsored Sessions Information (2/4)

Date	Sponsor	Title
21 June 2025	Eli Lilly	Bioequivalence of Insulin Efsitora Alfa (Efsitora) U-500 and U-1000 Formulations
21 June 2025	DEXCOM	New Approaches to Detect and Monitor Diabetes in Pregnancy
21 June 2025	Eli Lilly	Early Phase, Post Hoc, and Subgroup Analyses from Clinical Trials Testing Incretin-Based Therapies—Take 1
21 June 2025	Novo Nordisk	Comparison of Characteristics among Individuals with Established vs. Newly Diagnosed Type 2 Diabetes during Ischemic Stroke Hospitalization—A Retrospective Cohort Study
22 June 2025	Medtronic	Life Happens: How the MiniMed™ 780G System Mitigates Typical Challenges to Glycemic Equilibrium
22 June 2025	Abbott	Preoperative Carbohydrate Loading Supports Blood Glucose in Patients with Diabetes Undergoing Cardiac Surgery
22 June 2025	Novo Nordisk	Macrovascular and Microvascular Complications in Medicare Patients with Type 2 Diabetes and Atherosclerotic Cardiovascular Disease From 2006–2021—Incidence Stratified by Sex, Age, and Race/Ethnicity

ADA 2025 Key Industry Sponsored Sessions Information (3/4)

Date	Sponsor	Title
22 June 2025	Dexcom	Real-World Dexcom CGM Use in T2D NIT—Reduced Diabetes Distress and Improved Self-Care Behaviors
22 June 2025	AdventHealth	Joint ADA/ISPAD Symposium—Exploring Emerging Treatments for Pediatric Diabetes
22 June 2025	Novo Nordisk	Effect of Combined Therapy with Once-Weekly Subcutaneous Cagrilintide 2.4 mg and Semaglutide 2.4 mg (CagriSema) on Energy Intake, Gastric Emptying, and Appetite in Adults with Overweight or Obesity
22 June 2025	AdventHealth	Interventions to Prevent Hypoglycemia—Bench-to-Bedside
23 June 2025	Dexcom	Emerging Technologies to Access Glycemia Across the Spectrum of Diabetes
22 June 2025	AdventHealth	Characteristics and Drivers of Obesity in Type 1 Diabetes—Lessons from Registries
22 June 2025	Sanofi	Predictive Modeling for Presymptomatic Type 1 Diabetes Detection Using Open Claims Data

ADA 2025 Key Industry Sponsored Sessions Information (4/4)

Date	Sponsor	Title
22 June 2025	Sanofi	Predictive Modeling for Presymptomatic Type 1 Diabetes Detection Using Open Claims Data
22 June 2025	Sanofi	Identification of Earlier Stage Autoimmune Type 1 Diabetes Using Machine Learning Algorithms
22 June 2025	AdventHealth	Skeletal Muscle Adaptations
23 June 2025	Dexcom	Emerging Technologies to Access Glycemia Across the Spectrum of Diabetes
23 June 2025	Novartis	Iscalimab in Adolescents and Young Adults with New-Onset Type 1 Diabetes
23 June 2025	Novo Nordisk	Cagrisema-Induced Weight Loss in Diet-Induced Obese Rats Relies on Preserved Mitochondrial Leak Respiration in Skeletal Muscle
23 June 2025	Eli Lilly	Baseline Characteristics of Participants Who Achieved Normal BMI—Surmount-1 Three-Year Study Post Hoc Analysis

Noteworthy AI / ML presentations at ADA 2025

Themes from key AI / ML presentations at ADA 2025 (1/3)

- **Artificial intelligence and machine learning at ADA 2025 will demonstrate powerful applications across diabetes care, enhancing risk prediction, personalizing treatment, improving device and behavioral integration, and advancing equity in real-world clinical settings**
- Check out the key AI / ML themes at ADA 2025 below:
- **Personalized Treatment Prediction via Machine Learning:**
  - Machine learning predicted glycemic response using trial data and digital platforms. XGBoost achieved 89% accuracy, while pharmacogenomic modeling showed reduced tirzepatide binding in GLP-1R variants
- **AI Models for Risk Stratification in High-Risk Populations:**
  - AI models outperformed standard tools: AUROC 0.801 vs. 0.716 in Saudi data; Random Forest predicted heart failure mortality with 85% accuracy; XGBoost identified coronary stenosis with 94.7% sensitivity
- **AI for Glucose Monitoring and CGM Integration:**
  - CGM-derived metrics better predicted severe hypoglycemia risk. SmartGuide alerts reduce glycemic extremes. Heart rate and step data modestly improved glucose prediction during physical activity.

Themes from key AI / ML presentations at ADA 2025 (2/3)

- **Retinal and Image-Based AI Tools in Diabetes:**
  - AI accurately predicted HbA1c ($R^2 = 0.84$) from fundus images. EyeArt increased DR follow-up to 51%. ML identified β-cell loss and immune infiltration patterns in pancreatic tissue
- **Genomic and Variant-Based Modeling:**
  - AlphaFold modeling showed reduced tirzepatide binding to GLP-1R variants like A316T. Wild-type had highest affinity, supporting precision incretin therapy through pharmacogenetic matching
- **Equity and Psychosocial Integration via ML**
  - ML identified barriers to tech use among underserved teens and guided co-designed solutions. Psychiatric support improved glycemic trends in pediatric T2D when applied early.
- **Nutrition and Insulin Precision with AI Support**
  - AI outperformed humans in carb estimation via Carbsnap. GPT-4o predicted nutrition values with dietitian-level accuracy. Ensemble ML models predicted insulin dosing more precisely than traditional methods.

Themes from key AI / ML presentations at ADA 2025 (3/3)

- **AI-Powered Social and Structural Determinants Modeling:**
  - Machine learning revealed that financial barriers like affording prescriptions were significantly linked to greater diabetes severity in AI-READI data, with education showing a modest statistical impact
- **Real-World Data Reweighting for Population Health:**
  - GraphSAGE + KMeans reweighted All of Us data using NHANES benchmarks, improving representativeness (SMD 0.123→0.077) for national-level sociodemographic and clinical analysis
- **Physiological Signals Improve AI Glucose Forecasting:**
  - Adding heart rate and step data to DL models modestly improved glucose prediction during physical activity ($p < 0.001$), though Zone A+B accuracy remained unchanged

Noteworthy AI / ML presentations at AHA 2025

Notable Presentations At AHA 2025
AI / ML (1/12)

Date	Title	Author	Summary
21 June 2025	Machine Learning Reveals CGM Superiority over Hypoglycemia Awareness Questionnaires in Discriminating Individuals with Severe Hypoglycemia	Xiaohua D Zhang	• **Introduction**: This study addresses whether CGM-derived data better discriminates severe hypoglycemia (SH) risk than traditional hypoglycemia awareness (HA) questionnaires in adults with type 1 diabetes (T1D) • **Methodology**: In 708 adults with T1D, researchers assessed six-month SH event reports against CGM time-range metrics, Gold and ClarkeHAF scores, using Spearman correlation, logistic regression, and random forest (RF) models • **Results:** CGM metrics—especially TIR—showed stronger correlation with SH than questionnaire scores. Models using CGM alone outperformed Gold/Clarke-based models (higher AUC); combining both yielded modest gains • **Conclusions:** CGM metrics more accurately identify SH risk. Integrating CGM analysis enhances clinical hypoglycemia risk stratification
21 June 2025	Bridging Psychiatric Interventions and Glycemic Control in Children with Type 2 Diabetes Mellitus Based on Machine Learning	Jisun Park	• **Introduction**: Psychosocial interventions for pediatric T2DM remain underexplored. This study aligns with ADA and ISPAD guidance to evaluate psychiatric support using machine learning (ML) methods • **Methodology**: ML algorithms were applied to real-world data from 111 Korean youth with T2DM to determine optimal timing for psychiatric intervention in enhancing HbA1c control • **Results:** Early psychiatric care yielded modest HbA1c improvement and stabilized glycemic patterns. ML identified responsive subgroups; age showed no significant impact on intervention efficacy • **Conclusions:** ML-guided integration of psychiatric support may personalize T2DM management, improve outcomes, and set precedent for data-driven psychosocial strategy development in pediatric populations

Notable Presentations At AHA 2025
AI / ML (2/12)

Date	Title	Author	Summary
21 June 2025	Bridging Psychiatric Interventions and Glycemic Control in Children with Type 2 Diabetes Mellitus Based on Machine Learning	Jisun Park	• **Introduction**: Psychosocial care is underused in pediatric T2DM. This study investigates psychiatric interventions, in line with ADA and ISPAD guidelines, using machine learning for optimized integration • **Methodology**: Data from 111 T2DM patients at Inha University Hospital were analyzed using ML to identify when psychiatric support best improves glycemic control • **Results:** Early psychiatric intervention led to more stable glucose levels and mild HbA1c improvement. ML identified responsive subgroups; age was not a key determinant • **Conclusions:** This work pioneers ML-driven personalization in pediatric diabetes, advocating broader psychosocial integration to optimize disease outcomes and care pathways
21 June 2025	An Analysis of Early Engagement in a Smart-Technology–Based Weight Loss Intervention and Predictive Capability of Weight Loss	Bridget Sheridan	• **Introduction**: A prior RCT showed that app-based coaching promoted weight loss in overweight/obese adults. This analysis investigates whether early step-challenge engagement predicts 6-month success • **Methodology**: Participants' step counts during their first isolated 2-day challenge were compared to baseline (7 days prior) using accelerometer data. Engagement was linked to ≥5% body weight loss • **Results:** Responders increased steps by ~5993/day; non-responders decreased by ~2943/day (p=0.019). Early engagement strongly correlated with successful long-term weight reduction • **Conclusions:** Initial behavioral response predicts outcomes. Early step data could guide tailored digital coaching, enhancing intervention efficacy for low responders

Notable Presentations At AHA 2025
AI / ML (3/12)

Date	Title	Author	Summary
21 June 2025	Machine Learning–Based Prediction Models for Initial Insulin Pump Dosing in Type 2 Diabetes Patients. 813]	Xi Rong	• **Introduction**: Conventional weight-based insulin dosing is imprecise in T2D. This study aims to develop machine learning models for accurate premeal and basal insulin initiation • **Methodology**: Using data from 1,245 inpatients (internal) and 60 external cases, a stacked ensemble model (RF, XGBoost, GBM, SVM, Bayesian regression) predicted insulin doses within 24 hours of pump start • **Results:** Model 1 (premeal): RMSE 1.10–1.21 IU; Model 2 (basal): RMSE 2.31–3.89 IU. Both models outperformed standard methods in MAE, RMSE, and MAPE across validation sets • **Conclusions:** ML-driven dosing offers greater precision and clinical utility in insulin pump initiation; models are accessible via online calculator for real-time clinical use
21 June 2025	Impact of Heart Rate and Step Count on Deep Learning Glucose Prediction Models during Physical Activity. 921]	Erik Huneker	• **Introduction**: Physical activity disrupts glucose patterns in T1D. This study explores whether adding heart rate (HR) and step count per minute (SCPM) to deep learning (DL) models improves glucose forecasting • **Methodology**: Using the T1DEXI dataset (561 adults), two DL models were trained—one using glucose alone, the other including HR and SCPM. Evaluation excluded post-meal periods and focused on PA windows • **Results:** HR+SCPM models showed lower RMSE and better correlation ($p < 0.001$). Zone E errors decreased, but Zone A+B classification remained unchanged ($p = 0.92$) • **Conclusions:** HR and SCPM modestly improve glucose prediction. Further gains may require integrating insulin-on-board (IOB) data

Notable Presentations At AHA 2025
AI / ML (4/12)

Date	Title	Author	Summary
21 June 2025	Leveraging Machine Learning and Demographic Insights to Optimize Blood Glucose Management on a Digital Health Platform	Yifat Fundoiano-Hershcovitz	• **Introduction:** This study examines how demographics influence blood glucose (BG) trends in high-risk T2D users of the Dario Health platform, aiming to inform personalized digital interventions • **Methods:** Among 22,414 users (mean age 57.5), piecewise linear mixed-effects (LME) models assessed BG changes over 12 months, segmented at 4 months. ML-enhanced LME decision trees explored demographic patterns; lifestyle activities were also evaluated • **Results:** AvgBG declined significantly in the first 4 months (B=-6.8) and modestly thereafter. Age—not gender, BMI, or ethnicity—modulated trends. Users >60 showed the greatest improvement, especially with increased lifestyle activity engagement • **Conclusions:** Age-specific BG dynamics reveal ML's utility in personalizing digital T2D care. Digital platforms can target behavioral support more effectively using demographic signals
21 June 2025	Artificial Intelligence (AI)-Driven HbA1c Estimation from Retinal Images and Its Correlation with Lab-Measured HbA1c. 1019]	Soujanya Kaup	• **Introduction**: The retina offers noninvasive insights into systemic health. This study assesses AI-driven HbA1c prediction using retinal vascular features in type 2 diabetes (T2D) patients • **Methodology**: From 170 fundus images (12 normal, 158 T2D), 226 vascular biomarkers were extracted. After pruning, 10 top features were selected via LDA and Wilcoxon testing. A Random Forest Regressor was trained and validated on equal splits • **Results:** The AI model showed strong correlation with lab HbA1c (PCC = 0.98, R^2 = 0.84, MAE = 0.8). Bland–Altman analysis indicated minimal bias and acceptable agreement • **Conclusions:** AI can estimate HbA1c from retinal imaging with high accuracy, offering a scalable, noninvasive diabetes monitoring tool

Notable Presentations At AHA 2025
AI / ML (5/12)

Date	Title	Author	Summary
21 June 2025	Evaluating Glycemic Benefits of an AI-Driven Glucose Prediction App via Digital Twin Technology	Marc Breton	• **Introduction**: The Accu-Chek® SmartGuide Predict app offers predictive CGM alerts (LGP, NLP, GP) to help users proactively manage glucose fluctuations • **Methodology**: UVa's digital twin simulated 2458 days for 20 T1D users from REPLACE-BG. ADA-aligned interventions followed app alerts; effects compared to a CGM-only baseline model • **Results:** LGP alerts reduced hypoglycemia time (4.2%→0.46%), GP reduced hyperglycemia (25.3%→22.0%), and NLP lowered overnight lows (5.6%→3.8%), all with $p < 1e{-}4$ • **Conclusions:** SmartGuide's predictive alerts substantially improve glycemic time-in-range. Despite simulation-based limitations, the findings support clinical potential in T1D care
21 June 2025	An Innovative Approach to Durable and Accurate Glucose Sensing Technology	Andy Chapman	• **Introduction**: Carbometrics developed a novel CGM using a synthetic Glucose Binding Molecule (GBM) to improve precision and longevity, especially in hypoglycemic ranges • **Methodology**: Percutaneous filament sensors with polymer-immobilized GBM were tested via subcutaneous implantation in pigs, repeated in vitro glucose cycling, and dry aging. Performance was evaluated for durability, interference, and sterilization resilience • **Results:** The CGM maintained high accuracy over six weeks in vivo, with no degradation across all conditions. It showed minimal interference, stable hypoglycemic precision, and extrapolated longevity beyond one year • **Conclusions:** This next-gen CGM offers unmatched stability and performance, making it a strong candidate for implantable, long-term glucose monitoring in diabetes and critical care settings

Notable Presentations At AHA 2025
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Date	Title	Author	Summary
22 June 2025	Using One-Shot Prompting of Fine-Tuned Commercial Artificial Intelligence Models to Assess Nutrients from Photographs of Japanese Meals	Daniel Lane	• **Introduction**: Traditional food logging hinders dietary adherence in diabetes care. This study evaluates AI's ability to estimate nutrition from meal photos as a less burdensome alternative • **Methodology**: Using 1,363 Japanese meals (WFR and dietician estimates), GPT-4o was fine-tuned with chain-of-thought prompting. Performance was benchmarked against baseline models using a 988/247/128 train/validate/evaluate split • **Results:** Fine-tuned GPT-4o showed modest overall gains but underperformed in protein estimation. Accuracy in energy (ICC = 0.79), fat (0.57), and fiber (0.67) was comparable to human dieticians • **Conclusions:** AI photo-based estimation delivers clinically useful accuracy. While fine-tuning yields mixed benefits, current models can complement or rival human assessment in diabetes nutrition management
22 June 2025	Structural Modeling of GLP-1R Variants Interactions with Tirzepatide Using AI Tools—A Precision Diabetes Management Method	Anwar Mohammad	• **Introduction**: Tirzepatide (TZP) targets GLP-1R/GIP-R, but the effect of GLP-1R polymorphisms on TZP binding remains unknown. This study explores variant-specific binding dynamics to guide personalized therapy • **Methodology**: Four common GLP-1R variants (R131Q, L260F, G168S, A316T) were modeled using AlphaFold 3.0. MD simulations and MM/GBSA analysis quantified binding stability and energy compared to wild-type (WT) GLP-1R • **Results:** WT GLP-1R showed strongest TZP affinity (−168 kcal/mol). Variants showed reduced affinity: L260F (−161), R131Q (−155), G168S (−148), A316T (−139), indicating altered binding dynamics • **Conclusions:** Genetic variation in GLP-1R alters TZP binding strength. These findings support pharmacogenetic strategies to optimize incretin-based therapies in T2D and obesity

Notable Presentations At AHA 2025
AI / ML (7/12)

Date	Title	Author	Summary
22 June 2025	Attempts to Identify Predictors of Glycemic Control with Imeglimin—Machine Learning Analysis Using Clinical Trial Data	Katsuhiko Hagi	• **Introduction**: This study applies machine learning to imeglimin clinical trial data to identify baseline predictors of glycemic response in Japanese T2D patients • **Methodology**: Phase II/III data for imeglimin (alone or with insulin) were analyzed using classification trees, random forest, and Boruta feature selection to predict HbA1c outcomes without pre-selection of variables • **Results:** For monotherapy, key predictors were baseline HbA1c, age, and body roundness index (BRI). Best responders had HbA1c < 7.95% and age > 63. In combination therapy, BMI, LDL-C, and ALT predicted best outcomes (85% responders) • **Conclusions:** ML reliably identifies treatment-response profiles, supporting personalized use of imeglimin in T2D care through unbiased predictor discovery
22 June 2025	Impact of Social Determinants of Health on Diabetes Status—A Multivariable Analysis Using Artificial Intelligence Ready and Equitable Atlas for Diabetes Insights (AI-READI) Dataset	Aya Motoyoshi	• **Introduction**: This study examines how social determinants of health (SDoH) especially healthcare access and education—relate to diabetes severity in type 2 diabetes. • **Methodology**: Using AI-READI data (n=808), diabetes status was modeled as an ordinal outcome. PhenX survey data on healthcare/education access were analyzed via regression, adjusted for age, waist-hip ratio, and comorbidities • **Results:** Difficulty affording prescriptions and medical care was significantly associated with greater diabetes severity. Educational differences were minimal but occasionally significant across groups • **Conclusions:** Financial access to care strongly correlates with worse diabetes severity. Targeting economic barriers may improve health outcomes in high-risk populations

Notable Presentations At AHA 2025
AI / ML (8/12)

Date	Title	Author	Summary
22 June 2025	Reweighting All of Us Research Program Data to Correct for Sampling Bias—A Novel Machine Learning–Based Approach	Elizabeth Staton	• **Introduction**: The All of Us (AOU) dataset is large but not nationally representative. This study applies machine learning to correct for its sampling bias • **Methodology**: Using 44 shared features, GraphSAGE and KMeans clustered AOU and NHANES (2017–2020) participants. NHANES weights were applied within clusters to reweight AOU data • **Results:** Standardized mean difference across variables dropped from 0.123 to 0.077 post-weighting. The weighted AOU data better reflected national health and sociodemographic distributions • **Conclusions:** ML-based reweighting improved AOU's representativeness, enhancing its value for population-level research and policy applications
22 June 2025	Clinical Validation of an AI Predictive System for Diabetes Risk in KSA—A Comparative Study	Mohammad Ghosheh	• **Introduction**: Given the high diabetes burden in Saudi Arabia, this study compares an AI-based risk model trained on national claims data to the ADA diabetes risk calculator • **Methodology**: A cohort of 401,696 individuals from 2022–2023 MEDGULF data was analyzed. The AI model used diagnosis codes, prescriptions, and claims activity. AUROC scores were calculated for both models • **Results:** The AI model achieved an AUROC of 0.801 vs. 0.716 for the ADA calculator, showing a significant performance edge in one-year diabetes prediction • **Conclusions:** Locally trained AI offers superior risk prediction in KSA, supporting earlier identification and tailored public health interventions for diabetes prevention

Notable Presentations At AHA 2025
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Date	Title	Author	Summary
22 June 2025	Implementation of Artificial Intelligence (AI)–Based Diabetic Retinopathy Screening Improves Ophthalmology Follow-up in the Intermountain West	Cheri Watson	• **Introduction:** AI-driven retinal screening rapidly detects diabetic retinopathy (DR), but improving patient follow-up remains essential for effective disease management • **Methods:** Follow-up rates were retrospectively compared between traditional tele-retinal screening (2018–2021) and AI-based EyeArt screening (since May 2021) in patients with more-than-mild DR (MTMDR) • **Results:** Traditional screening follow-up within 3 months was 38% (16/42). With AI screening, follow-up rose to 51% (73/144), reflecting enhanced adherence through instant results and faster referrals • **Conclusions:** AI-based DR screening improves follow-up adherence over conventional methods, though structural barriers to care remain post-screening
22 June 2025	Humans vs. AI in Carb Counting—Insights from Carbsnap Usage Data	Florencio Mazzoldi	• **Introduction**: Precise carbohydrate estimation is vital for diabetes control. This study compares AI performance against human estimators—dietitians and non-dietitians—using real-world Carbsnap data • **Methodology**: Accuracy, consistency, and error patterns in carbohydrate estimates were evaluated across known food samples, categorized by user type and food characteristics • **Results:** AI consistently estimated carbs within ±10g with highest precision. Non-dietitians showed the most large errors (>25g), while dietitians performed better but still lagged behind AI • **Conclusions:** AI tools like Carbsnap outperform humans in carb counting, supporting their integration into clinical practice to improve insulin dosing and diabetes self-management

Notable Presentations At AHA 2025
AI / ML (10/12)

Date	Title	Author	Summary
23 June 2025	Machine Learning Identifies Glypican 4 as Key Predictor of Five-Year Mortality in Heart Failure Patients with Prediabetes or Diabetes	Andreas Leiherer	• **Introduction**: This study leverages machine learning to predict 5-year mortality in heart failure patients with type 2 diabetes or prediabetes—a high-risk, data-rich population • **Methodology**: A 290-patient cohort was analyzed using 470 variables. Data were split into training/testing sets. ML models, including Random Forest, were implemented via R's caret package • **Results:** Random Forest achieved 82% sensitivity, 89% specificity, and 85% accuracy. Top predictors included Glypican-4, hemoglobin, and glomerular filtration rate • **Conclusions:** ML models can stratify mortality risk effectively, enabling proactive, personalized care strategies for diabetic heart failure patients
23 June 2025	Empowering Black and Hispanic Teens with Type 1 Diabetes (T1D)—Codesigning Solutions to Overcome Barriers to Technology Use	Charlotte Chen	• **Introduction**: Black and Hispanic teens with T1D exhibit the highest A1c levels and lowest diabetes technology use. This study explores barriers and co-designed solutions to improve tech equity in this group • **Methodology**: Four human-centered design workshops were conducted with 14 underserved teens (mean age 15.1, A1c 9.3%) at a Bronx safety-net hospital. Transcripts were analyzed using inductive coding by three independent coders • **Results:** Teens cited device malfunctions, visibility concerns, emotional burnout, and poor supply access. Proposed solutions included enhanced navigation support, peer/mental health support, and education for independent care • **Conclusions:** Barriers are often caregiver-mediated. Broader diabetes support networks may better enable underserved teens to manage technology and self-care alongside unmet mental and social needs

Notable Presentations At AHA 2025
AI / ML (11/12)

Date	Title	Author	Summary
23 June 2025	Different Diagnostic Categories and Prediction of Complications in Chinese Hospitalized Diabetic Patients Based on Artificial Intelligence	Jia Zhang	• **Introduction**: This study investigates how clustering algorithms can classify diabetes subtypes and predict complication risks across large Chinese inpatient population • **Methodology**: Hard (e.g., K-means) and soft (e.g., Gaussian mixture) clustering were applied to datasets from Heilongjiang and validated with Beijing inpatients, analyzing subtype distribution and complication prevalence • **Results:** Consistent subtype patterns emerged: MOD was most prevalent; SIDD had highest TG/eGFR; MARD showed most DSPN/CHD; MOD had most hypertension. Soft clustering showed similar trends with distinct LDL-C and alcohol intake profiles across subtypes • **Conclusions:** Both clustering approaches reliably stratify Chinese inpatients with diabetes, aiding in subtype identification and complication risk prediction
23 June 2025	Predicting Coronary Stenoses Using Machine Learning to Reduce Unnecessary Angiographies	Andreas Leiherer	• **Introduction**: This study aims to develop a machine learning model to noninvasively predict significant coronary stenoses, minimizing false negatives and improving patient triage • **Methodology**: Data from 2,310 angiography patients were used. Outcomes (X0, X1, X2) were modeled with XGBoost, tuned via grid search and 5-fold cross-validation using 114 clinical variables • **Results:** XGBoost achieved 94.7% sensitivity and 74.5% F1 score for significant stenoses (X2). Key predictors included HbA1c, TyG index, FGF23, ceramides, and vitamin D—markers linked to insulin resistance • **Conclusions:** The ML model supports coronary risk stratification, potentially reducing invasive angiography and reinforcing the role of diabetes-related biomarkers in clinical decision-making

Notable Presentations At AHA 2025
AI / ML (12/12)

Date	Title	Author	Summary
23 June 2025	Developing a Machine Learning Based Predictive Model by Leveraging Clinical Biomarkers for Personalized Diabetes Management	Yifat Fundoiano-Hershcovitz	• **Introduction**: Digital health advancements enable predictive modeling for chronic conditions. This study develops a machine learning model to forecast next-month blood glucose (BG) levels based on user activity and prior glucose data • **Methodology**: Retrospective data from 4,631 users of the Dario platform (2022–2024) were analyzed. Monthly averages of BG and logged activities (e.g., food, steps, coaching) were calculated. An XGBoost regressor was trained to classify BG risk (cutoff: 169 mg/dL). Precision, recall, accuracy, and F1 score were used for evaluation • **Results:** Top predictive features included current BG, BG measurement frequency, activity logging, and nutrition tagging. After tuning, the model achieved 89% accuracy and an 82% F1-score, highlighting robust predictive capacity • **Conclusions:** Machine learning models using real-world digital behavior offer high-accuracy glucose forecasting. These tools promise enhanced personalization and proactive intervention in diabetes care
23 June 2025	Deep Learning–Powered Islet and CD3 T Cell Quantification for Type 1 Diabetes Immunohistochemistry	Sanghoon Kang	• **Introduction**: This study aims to improve T1D pathogenesis research by applying ML-assisted single-cell quantification to whole-slide pancreatic images, addressing heterogeneity and bias in manual analyses • **Methodology**: A total of 228 multiplex-stained slides from 76 donors (controls, AAb+, T1D) were analyzed using a QuPath-based ML pipeline. Islets, β-/α-cell areas, and CD3+ infiltration were quantified across pancreas regions. Wilcoxon tests assessed significance • **Results:** T1D progression was marked by reduced cluster diameters and β-cell area, increased islet diameter and α-cell area, and greater CD3+ infiltration early in disease. Multi-AAb+ donors showed significantly lower β-cell area than single-AAb+ • **Conclusions:** ML-based image quantification reveals dynamic endocrine cell remodeling and immune infiltration in T1D, offering improved granularity over traditional methods and supporting refined disease-stage characterization

Strategic Insights and Strategy Development is our focus