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NURS-FPX4025 Assessment 3

Applying the PICO(T) Process

CGM Versus Fingerstick Monitoring in Type 2 Diabetes

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Educational sample notice
This original model demonstrates one strong way to organize the assessment. It is not an official Capella University document. Learners must use the current courseroom instructions, their own simulation evidence, their own presentation recording, and their own clinical judgment.

Primary keyword: NURS-FPX4025 Assessment 3 Applying the PICO(T) Process

Related keywords: PICOT evidence analysis, type 2 diabetes, continuous glucose monitoring, self-monitoring of blood glucose, HbA1c, time in range

Type 2 Diabetes: Outcomes, Risks, and Complications

Type 2 diabetes mellitus develops when insulin resistance and progressive loss of adequate insulin secretion cause persistent hyperglycemia. Desired outcomes include an individualized HbA1c goal, more time in a safe glucose range, fewer symptomatic glucose events, treatment adherence, preserved kidney and eye function, and the ability to manage daily care without excessive burden. When control remains poor, patients face acute hyperglycemic crises and long-term retinopathy, neuropathy, chronic kidney disease, cardiovascular disease, infection, impaired wound healing, and reduced quality of life.

The burden is not evenly distributed. People with limited insurance, low income, unstable housing, rural residence, limited English proficiency, low digital literacy, disability, or inconsistent access to primary care may receive diabetes technology later or not at all. Cost, smartphone requirements, internet access, transportation, pharmacy supply, language, and distrust can limit benefit even when a device is clinically appropriate. A credible evidence-based plan must therefore examine both clinical effectiveness and the support needed for equitable use.

PICO(T) Question Development

Element	Definition for this project
P - Population	Adults with type 2 diabetes treated with basal insulin whose HbA1c remains above the individualized goal.
I - Intervention	Real-time or intermittently scanned continuous glucose monitoring plus structured nurse education and scheduled data review.
C - Comparison	Traditional self-monitoring of blood glucose using a blood glucose meter with usual diabetes education.
O - Outcome	Lower HbA1c and increased time in range without increased clinically important hypoglycemia.
T - Time	Six months.

PICO(T) question: In adults with type 2 diabetes treated with basal insulin and above their individualized HbA1c goal, does continuous glucose monitoring combined with structured nurse education and scheduled data review, compared with traditional fingerstick monitoring and usual education, reduce HbA1c and increase time in range without increasing clinically important hypoglycemia over six months?

Literature Search Strategy

The literature search used PubMed/MEDLINE, CINAHL, Cochrane Library, and Google Scholar for citation tracking. The guideline search used the American Diabetes Association Standards of Care. Key concepts were combined with Boolean operators: *(type 2 diabetes OR T2DM) AND (continuous glucose monitoring OR CGM OR flash glucose monitoring) AND (self-monitoring of blood glucose OR fingerstick OR SMBG) AND (HbA1c OR time in range OR hypoglycemia)*. Filters included adults, English language, systematic reviews, meta-analyses, randomized or prospective studies, clinical guidelines, and publication years 2022 through 2026.

Credibility criteria included peer review, author expertise, transparent methods, adequate sample size, comparison groups when appropriate, validated outcomes, risk-of-bias assessment, conflict-of-interest disclosure, current publication date, and direct relevance to adults with type 2 diabetes. Four sources met the criteria and provided complementary forms of evidence: two meta-analyses, one prospective clinical study, and one current practice guideline.

Evidence Source 1: Jancev et al. (2024)

Jancev et al. conducted a systematic review and meta-analysis of 12 randomized trials with 1,248 adults. Compared with self-monitoring of blood glucose, CGM reduced HbA1c by an average of 0.31 percentage points. CGM also increased time in range by 6.36 percentage points and reduced time above and below range. The review used multiple databases, independent screening, the Cochrane risk-of-bias tool, GRADE, and a registered protocol. These methods make the evidence highly credible. Its relevance is strong because the intervention and comparison directly match the PICO(T) question. Limitations include open-label trials, short follow-up, and limited evidence about severe events and long-term complications.

Evidence Source 2: Uhl et al. (2024)

Uhl et al. synthesized 14 randomized trials involving 1,647 participants. The analysis found that real-time and flash CGM produced a modest but statistically significant HbA1c reduction of about 0.32 percentage points. The authors searched MEDLINE, Embase, and Cochrane, evaluated evidence certainty with GRADE, and analyzed device types separately. This source is credible because it uses a transparent systematic method and focuses on randomized trials. It is relevant because it confirms that the benefit is not limited to one device or one study. The main limitation is that trial duration was short and important outcomes such as emergency visits and hospitalization were not consistently reported.

Evidence Source 3: Grace and Salyer (2022)

Grace and Salyer followed 38 adults with type 2 diabetes for six months after starting real-time CGM. Participants used basal insulin only or noninsulin therapy. Mean HbA1c decreased substantially, and time in range improved. The study is relevant because it reflects less-intensive therapy in routine practice and demonstrates how CGM can work outside a tightly controlled RCT. Its credibility is supported by prospective data collection, defined outcomes, and peer review. However, the single-arm design, small sample, and very high baseline HbA1c mean that the size of the improvement may not generalize to every clinic. It supports feasibility and potential benefit but should not outweigh randomized evidence.

Evidence Source 4: ADA Standards of Care (2026)

The American Diabetes Association Professional Practice Committee updates its Standards of Care through an expert, evidence-graded process. The 2026 diabetes technology section recommends individualized device selection, structured education, and ongoing support. This guideline is credible because it is current, multidisciplinary, transparent about evidence grading and conflicts, and published in a peer-reviewed journal. It is relevant because the PICO(T) intervention includes education and follow-up rather than device distribution alone. Guidelines do not replace local appraisal, and access, preferences, cognitive or physical needs, and treatment burden must still be considered.

Integrated Evidence Analysis

The two meta-analyses provide the strongest answer because they combine multiple randomized trials and show consistent, though modest, improvement in HbA1c. The Jancev review adds clinically useful CGM metrics, especially time in range. The Grace and Salyer study shows that larger improvements are possible in highly uncontrolled patients, but its design cannot separate the device effect from attention, education, medication changes, or regression to the mean. The ADA guideline strengthens the implementation component by emphasizing individualized selection, training, and continuing support.

The evidence therefore answers the PICO(T) question in favor of CGM, with conditions. For adults with type 2 diabetes using basal insulin and above target, CGM is more effective than fingerstick monitoring alone for improving HbA1c and time in range over approximately three to six months. Available studies do not demonstrate a consistent increase in severe hypoglycemia, but safety evidence is less certain because serious events are uncommon and trials are short. The expected average HbA1c improvement is modest, although patients with higher baseline values may improve more.

Evidence-Based Care Recommendation

The recommended intervention is a six-month CGM pathway rather than device-only care. Eligible patients should receive a shared-decision discussion, insurance and technology access review, sensor training, teach-back, written hypoglycemia instructions, and a backup blood glucose meter. Nurses should contact the patient within 72 hours, review data at two weeks, and coordinate treatment changes with the prescriber. Follow-up should focus on recurring patterns, time in range, time below range, nutrition, medication adherence, and the patient's goals.

Key Steps of Care

- Confirm the diagnosis, current insulin regimen, individualized HbA1c goal, hypoglycemia history, and reasons for poor control.
- Assess access, language, vision, dexterity, cognition, skin sensitivity, smartphone or receiver needs, and caregiver support.
- Use teach-back and return demonstration for sensor use, trend arrows, alerts, confirmatory fingersticks, and hypoglycemia treatment.
- Review the ambulatory glucose profile at two weeks and monthly until patterns are stable; avoid reacting to isolated values without context.
- Coordinate medication, nutrition, and activity changes with the licensed prescriber and diabetes care team.
- Measure HbA1c, time in range, time below range, severe events, satisfaction, continuation, and access gaps at three and six months.

Assumptions and Limitations

This recommendation assumes that the patient can obtain a device and supplies, receives structured education, and has clinical support for interpreting the data. It also assumes the clinic can respond to dangerous patterns and protect transmitted health information. The evidence does not prove that short-term HbA1c improvement will automatically prevent long-term complications, and average trial results do not guarantee benefit for every patient. A patient who dislikes alarms, cannot maintain sensors, or cannot afford ongoing supplies may reasonably choose another monitoring plan.

Conclusion

A precise PICO(T) question made the search focused and allowed evidence from trials, meta-analyses, real-world practice, and guidelines to be compared. The best available evidence supports CGM with structured education and scheduled review over fingerstick monitoring alone for adults with poorly controlled type 2 diabetes using basal insulin. The intervention should be offered through shared decision-making and evaluated for effectiveness, safety, burden, and equity.

References

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Assessment Coverage Map

This table shows where the sample addresses the major assessment expectations.

Requirement	Location in Sample
Explain the diagnosis, outcomes, risks, complications, and disparities.	Type 2 Diabetes: Outcomes, Risks, and Complications
Develop a correctly structured PICO(T) question.	PICO(T) Question Development table and question
Describe databases, search terms, and credibility criteria.	Literature Search Strategy
Analyze at least three current diagnosis-specific sources.	Evidence Sources 1 through 4
Answer the question using a synthesis of evidence.	Integrated Evidence Analysis
Translate evidence into care decisions.	Evidence-Based Care Recommendation and Key Steps of Care