

Pancreatogenic Diabetes in the Inpatient Setting: Diagnostic Oversight and Glycaemic Variability in Pancreatic Pathologies

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Aims

Type 3c Diabetes Mellitus (T3cDM) is defined as diabetes that arises from significant damage to the pancreas, commonly due to acute and chronic pancreatitis, pancreatic cancer, or pancreatic resection. This subset of diabetes represents approximately 10% of all diabetes worldwide yet is often overlooked and underdiagnosed. Despite its clinical importance, T3cDM is frequently misclassified as Type 2 Diabetes Mellitus, leading to delayed recognition and suboptimal management. This project aims to address the gap in patient and clinician understanding of Type 3cDM by improving education, strengthening safety-netting practices, and ensuring timely and appropriate follow-up care.



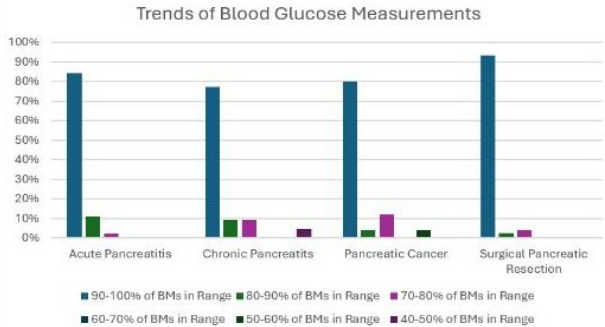
Methods

A retrospective observational study was conducted on 302 inpatients admitted under the Hepatobiliary and Pancreatic surgery team at Royal Surrey Hospital—a tertiary pancreatic centre—between January and December 2023. Inclusion criteria targeted patients diagnosed with acute pancreatitis, chronic pancreatitis, pancreatic cancer, or those who had undergone pancreatic resection. Patients with a prior diagnosis of any type of diabetes were excluded. Data were collected from electronic records, focusing on blood glucose readings in the first week of admission, HbA1c levels, use of Variable Rate Insulin Infusions (VRII), and referrals to the diabetes team during admission.



Results

Across all diagnostic groups, most patients had greater than 90% of their blood glucose readings within the acceptable range (4 to 14.9 mmol/L). Chronic pancreatitis patients had 92.6% (n=22) of readings within range, acute pancreatitis 96.0% (n=41), pancreatic cancer 93.7% (n=25), PPPD 98.8% (n=21), Whipple's 99.1% (n=27), distal pancreatectomy 99.6% (n=25), and total pancreatectomy 74.3% (n=3).



Data was not normally distributed. Descriptive statistics and non-parametric tests (Kruskal-Wallis H test) were carried in out SPSS, Version 29 (IBM, US). Glycaemic control varied significantly across diagnostic groups (Kruskal-Wallis H test, $p<0.001$). New diabetes diagnoses occurred in 31.8% of chronic pancreatitis, 8.9% of acute pancreatitis, 32% of pancreatic cancer, and 19.7% of pancreatic surgical patients. Endocrinology referral rates were low (25–57%) across all groups and management of diabetes

	Diabetes Diagnosed % (n/N)	Referred to Endocrinology % (n/N)
Acute Pancreatitis	8.9% (4/45)	50% (2/4)
Chronic Pancreatitis	31.8% (7/22)	57.1% (4/7)
Pancreatic Cancer	32% (8/25)	25% (2/8)
Surgical Resections	19.7% (15/76)	46.7% (7/15)



Conclusion

This observational study demonstrates the importance of monitoring blood glucose in the inpatient setting to ensure prompt recognition and diagnosis of Type 3c Diabetes. The lack of clear diagnostic referral pathways and endocrine follow up increases the risk of delayed diagnosis post-discharge, as patients may only be identified once symptomatic. Uncontrolled diabetes, due to missed referrals and inadequate monitoring, increases the risk of preventable complications such as kidney, eye, nerve, and heart disease — risks that could be reduced through routine endocrine referrals and completion of the annual NICE diabetes care checks. This study highlights the need for defined referral criteria, structured inpatient management protocols, and outpatient pathways to ensure timely diagnosis and follow-up for patients at risk of T3cDM.



References

1. What is type 3C diabetes? (2022) Diabetes UK. Diabetes UK. Available at: <https://www.diabetes.org.uk/diabetes-the-basics/type-3c-diabetes> (Accessed: January 8, 2023).
2. Hart, P.A. et al. (2016) "Type 3C (pancreatogenic) diabetes mellitus secondary to chronic pancreatitis and pancreatic cancer," The Lancet Gastroenterology & Hepatology, 1(3), pp. 226–237. Available at: [https://doi.org/10.1016/s2468-1253\(16\)30106-6](https://doi.org/10.1016/s2468-1253(16)30106-6).
3. Gudipaty, L. and Rickels, M.R. (2015) "Pancreatogenic (type 3C) diabetes," The Pancreapedia: Exocrine Pancreas Knowledge Base, 1. Available at: <https://www.pancreapedia.com/>.