Background T2DM is a progressive disease with which can affect multiple body systems. And has a rapidly increasing prevalence.

Visfatin is one of the adipokines which might play a role in the pathogenesis of T2DM, insulin resistance and all parameters of metabolic syndrome.

Also Fetuin-A is a protein synthesized by the liver and released in the circulation. It resembles serum albumin but is more abundant during fetal life. It is involved in several functions such as endocytosis, brain development and the formation of bone tissue, however its exact significance is still obscure, its importance in T2DM, Insulin resistance is still debatable.

The aim of this study is to assess the level of fetuin-A and visfatin in patients with T2DM and to correlate their levels with clinical and other biochemical variables in patients

Objectives Assessment of the level of novel markers fetuin-A and visfatin in patients with type 2 diabetes mellitus and to correlate their levels with clinical and other biochemical variables in such patient

Methods This case control study was conducted on 88 participants divided into two groups.

First group included 44 already diagnosed type 2 diabetes (cases), 19 males and 25 females, their age ranged between 10 and 16 years. They were selected by stratified random method from outpatient clinics and inpatients of Mansoura children hospital.

Second group included 44 apparently healthy non diabetic individuals of matched age and sex (control group). Their non-diabetic state was confirmed by oral glucose tolerance test. A written consent was obtained from all participants.

Both groups were subdivided into 2 subgroups, obese group ($BMI \geq 30 \text{ kg/m}^2$), non-obese group ($BMI < 30 \text{ kg/m}^2$)

Results There was no significant difference between all study groups as regard age, gender, smoking, systolic, diastolic, mean blood pressure, LDL-C and total cholesterol (all p -value > 0.05).

There was a significant difference between all study groups as regard body mass index, HDL-C, TG, fasting blood glucose, 2 hour post-prandial blood glucose, fasting insulin, HOMA-IR, HbA1c, visfatin and fetuin-A (all p value < 0.05)

Conclusions Our study concluded that serum visfatin levels were higher in patients with T2DM versus control subjects also serum visfatin was high in obese subjects versus non obese whether diabetic or non-diabetic and there was positive correlation between visfatin level and HOMA-IR, FPG and BMI.

The increased level of serum visfatin in T2DM may be related to obesity, hyperglycemia which could induce visfatin release or it is a compensatory mechanism to ameliorate insulin deficiency with progressive B cell dysfunction in insulin resistant patient, or finally due to adipose tissue inflammation in insulin resistant subjects.

As regard Fetuin-A we showed that its level is deficient in T2DM and also decreased levels had been decreased in obese versus non obese subjects with negative correlation with HOMA-IR, BMI and FPG which may be due to some medications used like metformin and pioglitazone which were established to reduce the level of fetuin-A or due to non-enzymatic glycation which mask the effect of fetuin-A on insulin resistance due to glucose toxicity.

Quality Improvement and Patient Safety

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TO BLEEP OR NOT TO BLEEP? IMPROVING NIGHTSHIFT WORKING FOR PAEDIATRIC JUNIOR DOCTORS

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Background Healthy nightshift working for doctors' wellbeing and patient safety is well documented. However anecdotally many tier-1 trainees (junior residents) struggle to take natural breaks due to non-urgent tasks communicated via the 'bleep' system.

Objectives Our aim was to record bleeps made to the tier-1 trainee over 7 nights to investigate whether there were opportunities to improve nightshift working.

Methods The study ran over 7 consecutive nightshifts (20:30–08:30) in November 2019 at a large tertiary children's department. One tier-1 trainee is supported by one tier-2 trainee (senior resident) overnight. All bleeps were logged over the period described. We analysed the bleep frequency, reason and timing.

Results 173 bleeps were received over 7 nightshifts with a mean (SD) of 24.7 (7.1) bleeps/night and 2.1 (1.6) bleeps/hour. 33 bleeps (19.1%) were for urgent patient reviews. 40 (23.1%) were prescription queries. 11 (6.4%) to re-site cannulas. 18 (10.4%) were laboratory result reviews. 19 (11%) were made in error. Only 5 bleeps (2.9%) were for multiple queries. Between 2:30am–5:30am, the natural circadian nadir, there were 6.6 bleeps (SD 1.4); 64% were scored as non-clinically urgent.

Conclusions

- We found trainees are bleeped approximately once every 30 minutes between 2:30am–5:30am, nearly two-thirds of which could have waited.
- Non-urgent tasks should be limited out-of-hours and trainees encouraged to take natural breaks.
- This could be facilitated by bleeps between 2:30am–5:30am being escalated via the ward nurse-in-charge.
- Bleep frequency tended to peak after the nursing handovers, often coinciding with doctors' handovers. Distraction during this period may lead to doctors missing important clinical information.
- Altering daytime prescribing practise to cover for the night time could reduce the prescribing pressure for a doctor over night.
- We advise offering guidance to nursing teams to cohort communication of non-urgent tasks; minimising incorrectly directed bleeps and interruptions to clinical reviews.

Quality Improvement and Patient Safety

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MANAGEMENT OF CROUP: A QUALITY IMPROVEMENT PROJECT

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Background Croup is a common presentation in early childhood. In 2019, following anecdotal reports of high numbers of croup admissions receiving adrenaline, we carried out a quality improvement project of acute croup management. Whilst the use of single dose nebulised adrenaline is not associated with clinically significant adverse effects, superfluous use may be associated with patient distress and lengthier hospital stays.

Objectives This QI project aimed to evaluate and improve management of croup at a major children's teaching hospital through use of multiple PDSA cycles. Specifically, it aimed to improve patient safety by reducing unnecessary use of medications.

Methods Retrospective data in electronic patient records for children presenting to ED or children's clinical decision unit (CDU) with croup over a 3-month period was assessed. There was significant variation in croup management which was not consistent with national recommendations or Trust guidelines. A key finding was that overall use of adrenaline was higher than predicted and often without clear indication.

Interventions were developed to (1) improve clinical knowledge of croup management and (2) enhance support structures for staff treating croup patients. This involved improving clinical knowledge among multi-professional staff through increasing awareness of guidelines with posters and educational sessions. There was also a focus on ensuring a structure of senior support to promote sustainability of the intervention.

Following intervention, data collection was repeated in autumn 2020 to review the sustainability of the project.

Results In September – November 2019, 394 patients were seen with croup. 31 (7.8%) received nebulised adrenaline. In September only 56% (9/16) met the criteria for use of adrenaline, while it was 43% (6/14) in October. A total of 128 patients (32%) were admitted.

Limitations of the study include the effects of national lockdowns during the second data collection, which likely resulted in lower transmission of parainfluenza and fewer croup presentations. Education was also paused due to staff redeployment.

In October – December 2020, 32 patients were seen. None of them received adrenaline and only 2 were admitted (6.3%). 97% of children were treated appropriately with dexamethasone.

Trust policy is to admit children for an 8-hour observation period following adrenaline treatment. This equated to an additional 11 bed days over 3 months in 2019. This waste of resource has been eliminated since the implementation of our project.

2019	Total croup	Nebulised adrenaline	Steroid therapy	Admission
September	44	1	31	18
October	149	16	110	56
November	201	14	140	54
Total	394	31	281	128
2020				
October	15	0	15	1
November	7	0	7	1
December	10	0	9	0
Total	32	0	31	2

Conclusions All children received appropriate care in line with guidelines since implementing the QI programme. Following intervention, there were no cases where children received unwarranted adrenaline, showing that increased clinical knowledge can improve patient safety and reduce unnecessary admissions. It is reassuring that the sustainability of our intervention was not affected by the effects of COVID-19 and improvements were sustained over the next year.

Quality Improvement and Patient Safety

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DIAGNOSIS AND MANAGEMENT OF URINARY TRACT INFECTION (UTI) IN UNDER 16S ACCORDANCE WITH NICE CG54: CLINICAL AUDIT AND LESSONS LEARNT

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Background Urinary tract infections (UTI) are a common and potentially serious bacterial infection in children. Signs and symptoms are often non-specific, and hence easily missed. The mainstay for diagnosis is urinalysis and culture, however, urine collection can be challenging in children. NICE CG54 outlines the diagnosis and management of UTI in under 16s, including the indications for urine testing, duration of antibiotics therapy and indications for imaging.

Objectives To audit the compliance of UTI diagnosis and management to the standards in CG54. Our target was 100% compliance with NICE guidelines.

We aimed to identify if there were areas for improvement, implement change if required and re-audit thereafter.

Methods In the first audit cycle, we conducted a retrospective audit on patients presenting with signs and symptoms of a UTI between April and May 2019.

We identified areas for improvement and presented our findings at our local audit meeting. We then provided teaching sessions to two cohorts of trainees in July and September 2020. Additionally, we developed a quick reference card as an aide-memoire, which was added to our junior doctor card deck given out during induction. The card included a UTI checklist and the NICE imaging schedule.

To close the audit cycle, a second retrospective audit was undertaken to identify children with UTI between October and November 2020.

Results In the first audit cycle, 92% (23/25) of children with unexplained fever, and 95% (21/22) of children with signs and symptoms suggestive of UTI, had a urine sample within 24 hours. 71% (5/7) of those under 3-months-old had a urine culture performed. 95% (21/22) of those above 3-years-old had a urine dip performed as first-stage strategy for urine testing.

Of the children diagnosed with UTI, 56% (9/16) were prescribed antibiotics appropriately.

92% (11/12) had ultrasonography in accordance with guidelines, but none (0/6) of the children who required a DMSA were scanned according to schedule. 50% (1/2) of children who required an MCUG were prescribed prophylactic antibiotics.

Results from the second audit cycle demonstrated an improvement in criteria compliance. We identified 12 children with a UTI. 100% (4/4) of those under 3-months-old had a