EVIDENCE REPOSITORY

Diabetic Ketoacidosis (DKA)

EVIDENCE REPOSITORIES

Evidence repositories are collections of best available resources and evidence (clinical guidelines, peer reviewed literature, systematic reviews, etc.), collated by our knowledge synthesis team and content advisors. This evidence repository is not intended to be an exhaustive list of resources for a topic, but rather a curated list of current, evidence-based resources, based on expert consensus of relevance and usability for a general emergency department setting. We search databases (Cochrane Library, PubMed, TRIP Database) and web search engines (Google, Google Scholar) to locate evidence. Additionally, hospital websites are browsed for guidance documents, such as clinical practice guidelines (CPG) for healthcare professionals.

Every effort is made to identify resources that are open access (i.e. publicly available, free of charge, not requiring a subscription).

More information about the creation of our evidence repositories can be found at https://pubmed.ncbi.nlm.nih.gov/28537762/

CONTENT TEAM

Thank you to the following content experts and Knowledge Synthesis team who led the development of this evidence repository.

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TREKK developed resources for healthcare providers and parents & families can be found **here.**

Clinical Guidelines

1. Gripp KE, Trottier ED, Thakore S, et al. Current recommendations for management of paediatric diabetic ketoacidosis. Canadian Paediatric Society. 2022.
2. Glaser N, Fritsch M, Priyambada L, et al. ISPAD clinical practice consensus guidelines 2022: Diabetic ketoacidosis and hyperglycemic hyperosmolar state. Pediatr Diabetes. 2022;23(7):835-56.
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6. National Institute for Health and Care Excellence. Diabetes (type 1 and type 2) in children and young people: Diagnosis and management. National Institute for Health and Care Excellence. 2015.

Systematic Reviews

1. Rugg-Gunn CE, Deakin M, Hawcutt DB. Update and harmonisation of guidance for the management of diabetic ketoacidosis in children and young people in the UK. BMJ Paediatr Open. 2021;5(1):e001079.
2. Ravikumar N, Bansal A. Application of bench studies at the bedside to improve outcomes in the management of severe diabetic ketoacidosis in children-a narrative review. Transl Pediatr. 2021;10(10):2792-8.
3. Cherubini V, Marino M, Carle F, et al. Effectiveness of ketoacidosis prevention campaigns at diagnosis of type 1 diabetes in children: A systematic review and meta-analysis. Diabetes Res Clin Pract. 2021;175:108838.
4. Alhumaid S, Al Mutair A, Al Alawi Z, et al. Diabetic ketoacidosis in patients with SARS-CoV-2: A systematic review and meta-analysis. Diabetol Metab Syndr. 2021;13(1):120.
5. McGregor S, Metzger DL, Amed S, et al. Fluid management in children with diabetic ketoacidosis. Can Fam Physician. 2020;66(11):817-9.
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7. Glaser N, Kuppermann N. Fluid treatment for children with diabetic ketoacidosis: How do the results of the pediatric emergency care applied research network fluid therapies under investigation in diabetic ketoacidosis (fluid) trial change our perspective? Pediatr Diabetes. 2019;20(1):10-4.
8. Usher-Smith JA, Thompson MJ, Sharp SJ, et al. Factors associated with the presence of diabetic ketoacidosis at diagnosis of diabetes in children and young adults: A systematic review. Bmj. 2011;343:d4092.
9. Chua HR, Schneider A, Bellomo R. Bicarbonate in diabetic ketoacidosis - a systematic review. Ann Intensive Care. 2011;1(1):23.

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Key Studies

1. Chambers MA, Mecham C, Arreola EV, et al. Increase in the number of pediatric new-onset diabetes and diabetic ketoacidosis cases during the covid-19 pandemic. Endocr Pract. 2022;28(5):479-85.
2. Rewers A, Kuppermann N, Stoner MJ, et al. Effects of fluid rehydration strategy on correction of acidosis and electrolyte abnormalities in children with diabetic ketoacidosis. Diabetes Care. 2021;44(9):2061-8.
3. Rameshkumar R, Satheesh P, Jain P, et al. Low-dose (0.05 unit/kg/hour) vs standard-dose (0.1 unit/kg/hour) insulin in the management of pediatric diabetic ketoacidosis: A randomized double-blind controlled trial. Indian Pediatr. 2021;58(7):617-23.
4. Jacob R, Weiser G, Krupik D, et al. Diabetic ketoacidosis at emergency department presentation during the first months of the SARS-CoV-2 pandemic in Israel: A multicenter cross-sectional study. Diabetes Ther. 2021;12(5):1569-74.
5. Glaser NS, Stoner MJ, Garro A, et al. Serum sodium concentration and mental status in children with diabetic ketoacidosis. Pediatrics. 2021;148(3).
6. Chao LC, Vidmar AP, Georgia S. Spike in diabetic ketoacidosis rates in pediatric type 2 diabetes during the Covid-19 pandemic. Diabetes Care. 2021;44(6):1451-3.
7. Bergmann KR, Abuzzahab MJ, Nowak J, et al. Resuscitation with ringer's lactate compared with normal saline for pediatric diabetic ketoacidosis. Pediatr Emerg Care. 2021;37(5):e236-e42.
8. Abulebda K, Whitfill T, Montgomery EE, et al. Improving pediatric diabetic ketoacidosis management in community emergency departments using a simulation-based collaborative improvement program. Pediatr Emerg Care. 2021;37(11):543-9.
9. Ghetti S, Kuppermann N, Rewers A, et al. Cognitive function following diabetic ketoacidosis in children with new-onset or previously diagnosed type 1 diabetes. Diabetes Care. 2020;43(11):2768-75.
10. DePiero A, Kuppermann N, Brown KM, et al. Hypertension during diabetic ketoacidosis in children. J Pediatr. 2020;223:156-63.e5.
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15. Kuppermann N, Ghetti S, Schunk JE, et al. Clinical trial of fluid infusion rates for pediatric diabetic ketoacidosis. N Engl J Med. 2018;378(24):2275-87.
16. Yung M, Letton G, Keeley S. Controlled trial of Hartmann's solution versus 0.9% saline for diabetic ketoacidosis. J Paediatr Child Health. 2017;53(1):12-7.
17. Glaser NS, Wootton-Gorges SL, Buonocore MH, et al. Subclinical cerebral edema in children with diabetic ketoacidosis randomized to 2 different rehydration protocols. Pediatrics. 2013;131(1):e73-80.

18. Sottosanti M, Morrison GC, Singh RN, et al. Dehydration in children with diabetic ketoacidosis: A prospective study. Arch Dis Child. 2012;97(2):96-100.

19. Lawrence SE, Cummings EA, Gaboury I, et al. Population-based study of incidence and risk factors for cerebral edema in pediatric diabetic ketoacidosis. J Pediatr. 2005;146(5):688-92.

Other Resources

1. MacPhee S. PEDS DKA. Faculty Development Dalhousie Medicine. 2020.