

Prevention of hypoglycaemia, the ASAP (Anticipate, Suspect, Act, Prevent) strategy

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Abstract

This article describes a simple framework to prevent hypoglycaemia. Four strategies of prevention are detailed, which correspond to four levels of prevention (primordial, primary, secondary and tertiary). This framework, given the mnemonic ASAP (As Soon As Possible) includes action to Anticipate and Avoid, and Suspect and Screen hypoglycaemia. It also enjoins us to Act and Assist persons with hypoglycaemia in a timely manner, while working to Prevent and Protect them by using safer glucose lowering drugs and insulins.

Keywords: Diabetes, Hypoglycaemia, Insulin analogues, Levels of prevention, Modern glucose lowering drugs.

Diabetes is a dynamic disease, which presents multiple, ever changing challenges for both patient and physician. One such challenge is hypoglycaemia.¹ Ideally, hypoglycaemia should not occur at all, and modern diabetes management should have succeeded in 'eradicating' this acute complication of diabetes. Newer glucose-lowering drugs have succeeded in reducing the

modern analogue insulins, which carry a lower risk of hypoglycaemia, especially nocturnal hypoglycaemia.^{3,4}

However, a complicated interplay of diet, physical activity pharmacological treatment strategies, and comorbid complications, ensure that hypoglycaemia is still a major concern in diabetes care. We suggest an ASAP strategy, which should be implemented by all diabetes care providers, including primary care physicians, ASAP (As Soon As Possible) (Table).

1. Anticipate and Avoid: Hypoglycaemia should be anticipated and prevented proactively rather than just being managed in a reactive manner. A history-taking or clinical conversation may reveal planned, or expected, situations where hypoglycaemia may occur. These include fasting (religious or otherwise), excessive physical activity, other changes in life style, and travel. Doses of secretagogues and insulin should be adjusted to avoid hypoglycaemia.² Patient education and empowerment facilitates this process of primary prevention.

Table: Prevention of hypoglycemia, ASAP (As Soon As Possible).

ASAP	Level of prevention	Clinical situation	Action
Anticipate and Avoid	Primary	Hypoglycaemia is anticipated	<ul style="list-style-type: none"> ◆ Clinical conversation to elicit possible changes in diet, physical activity, concomitant medication intake ◆ Appropriate lifestyle and dose modification
Suspect and Screen	Secondary	Hypoglycaemia is suspected	<ul style="list-style-type: none"> ◆ Careful history taking to elicit typical and atypical, including culture- bound symptoms of hypoglycaemia ◆ Frequent and/or focused glucose monitoring
Act and Assist	Tertiary	Hypoglycaemia is documented/confirmed	<ul style="list-style-type: none"> ◆ Timely management of hypoglycaemia, by oneself or with assistance
Prevent and protect	Primordial	Avoidance of risk factors of hypoglycaemia	<ul style="list-style-type: none"> ◆ Prescribe safe glucose-lowering medication with low risk of hypoglycaemia

risk of hypoglycaemia markedly. Traditional sulfonylureas such as chlorpropamide and glibenclamide, are either obsolete or rarely used now.² Insulins with marked variability, such as Lente, semi Lente and ultra-Lente are no longer manufactured, as are bovine and porcine insulins. Human insulins are gradually being replaced by

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2. Suspect and Screen: A high index of suspicion should be kept for typical as well as atypical symptoms of hypoglycaemia. Traditionally, symptoms of hypoglycaemia have been classified as neuroglycopenic and adrenergic.⁵ There may also be symptoms related to glucagon secretion. Nocturnal hypoglycaemia presents with unique symptoms. Linguistic issues also crop up while interpreting symptoms suggestive of hypoglycaemia; culture- bound complaints may be reported.^{6,7} The astute physician should suspect hypoglycaemia in relevant clinical situations, and should

take measures to screen for it through laboratory-based or self-monitoring of blood glucose. This 'early diagnosis' strategy is akin to secondary prevention.

3. Act and Assist: In case hypoglycaemia occurs, it should be managed immediately. People living with diabetes, and their care givers, should be trained to manage hypoglycaemia with oral carbohydrates. In selected cases, glucagon may be kept handy for use if required.⁸ Health care professionals and facilities should be able to manage severe hypoglycaemia effectively. This is a tertiary prevention strategy.

4. Prevent and Protect: The burden of hypoglycaemia can be reduced even further by using safer, better tolerated drugs which are associated with a lower risk of hypoglycaemia. Novel insulin analogues such as degludec and degludec aspart have demonstrated lesser risk of hypoglycaemia and nocturnal hypoglycaemia.^{3,4} Glucagon like peptide-1 receptor agonists (GLP1RA), dipeptidyl peptidase 4 inhibitors (DPP4i) and sodium glucose cotransporter 2 inhibitors (SGLT2i) are modern classes of glucose lowering drugs with lower risk of hypoglycaemia. A similar advantage is shared by insulin sensitizers, alpha glucosidase inhibitors, and modern sulfonylureas. Such practice can be compared with primordial prevention, in which proactive measures are taken prior to onset of risk factors.

Summary

The ASAP strategy presents an easily understandable

framework which views hypoglycaemia from a proactive, preventive framework, rather than a reactive, curative viewpoint. It highlights basic measures that can be taken when hypoglycaemia is anticipated, suspected, or documented/ experienced, in order to mitigate its impact.

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