

Le recours à l'HbA1c versus au Time in Range (TIR)

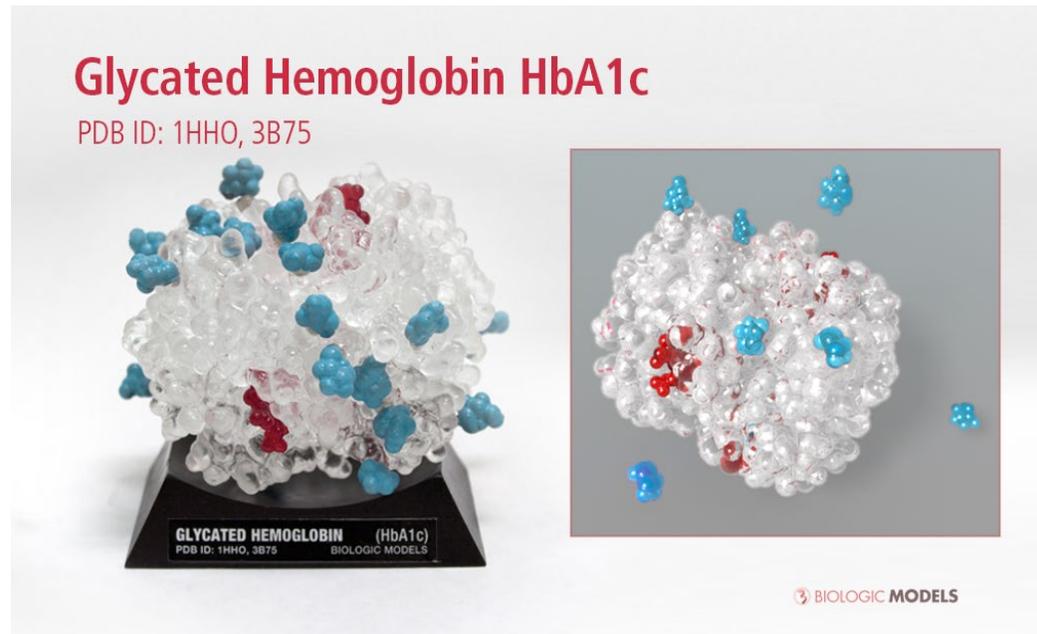
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Département de Pédiatrie

Aucun conflit d'intérêt

sauf d'être née comme l'HbA1c ..dans les 70's

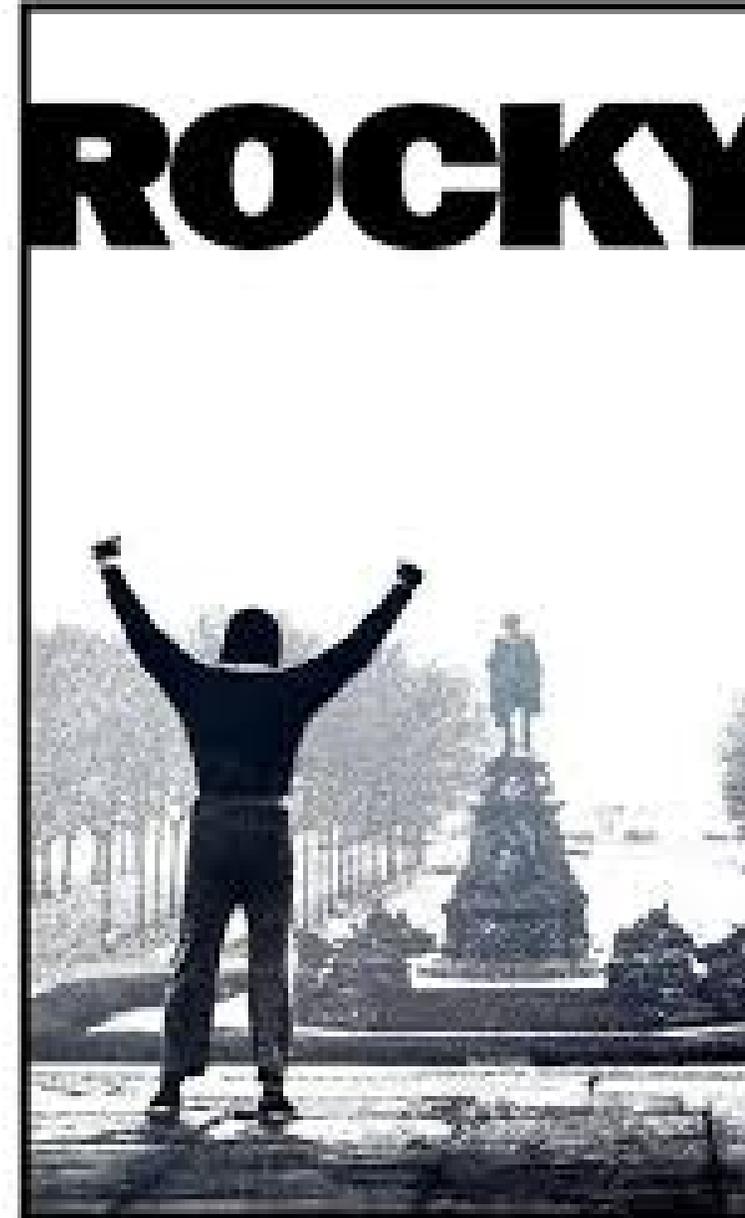


Objectifs

Le recours à l'HbA1c versus au Time in Range (TIR)

- 1- Apprécier l'utilité de l'HbA1c dans le suivi du diabète
- 2- Identifier les avantages d'utiliser seul le TIR ou l'HbA1c pour évaluer le contrôle glycémique
- 3- Diminuer les obstacles à l'utilisation du TIR et de l'HbA1c en pédiatrie

GAGNER LE DÉBAT COMBAT



Échauffement

HbA1c

- Disponible facilement
- Standardisée
- Mesures reproductibles
- Forte corrélation avec la glycémie moyenne
- Moins fiable si anémie, déficit en fer, Hbpathies

TIR

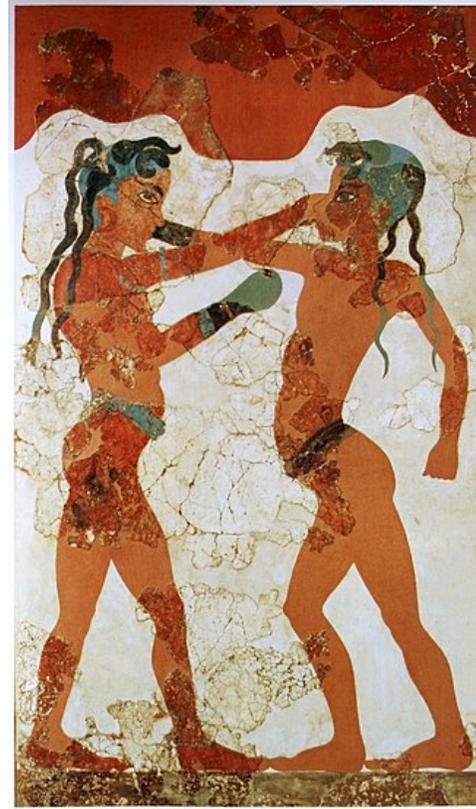
- Coût
- Pas de standardisation internationale
- Paramètres calculés à partir des données du capteur mais pas une mesure en soi
- Frustration technologique, anxiété, trop de données



La bataille commence...

HbA1c > TIR comme outil diagnostique pour le diabète

- Diabète si **HbA1c > 6.5%**
- Plus valable pour le diabète de type 2, car progression lente
- Pour le diabète de type 1, une valeur inférieure au seuil n'exclue pas le diagnostic et se fier plus aux tests glycémiques
- *ISPAD guidelines 2018 et 2022 (draft)*

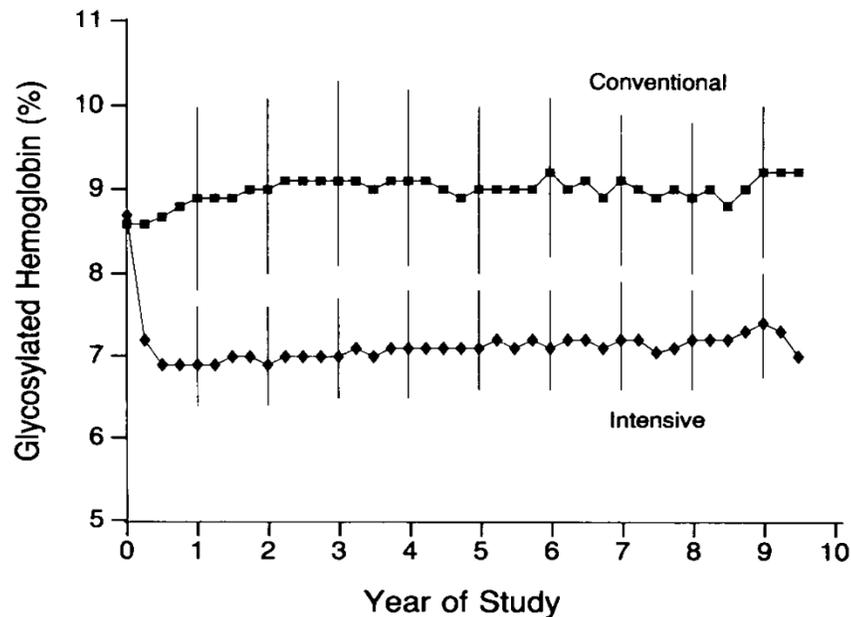


Les coups gagnants: direct du bras avant

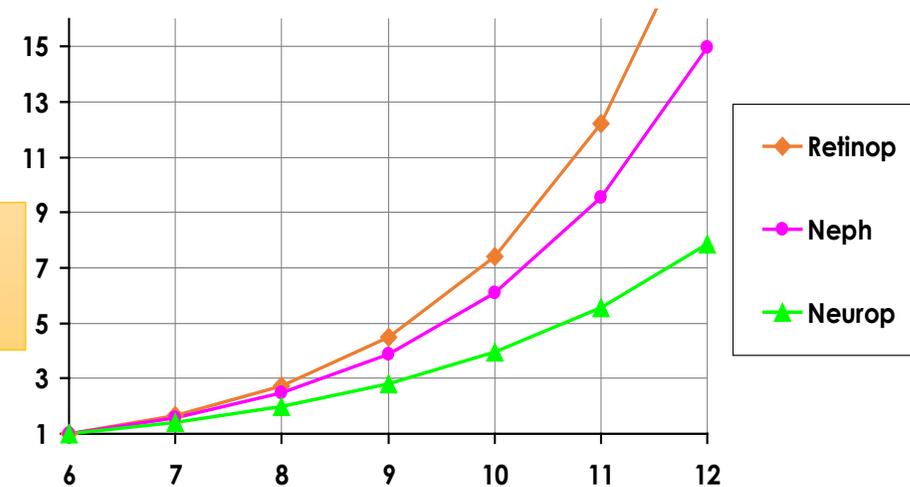


1- HbA1c = gold standard pour la prédiction des complications (1)

DCCT 1993



RELATIV
RISK



Mean A1C

Les coups gagnants: uppercut



2- HbA1c pour évaluer l'efficacité d'un traitement dans une étude randomisée contrôlée

Bionic Pancreas Research Group,
N Engl J Med. 2022 Sep 29;387(13)

RESEARCH SUMMARY

Multicenter, Randomized Trial of a Bionic Pancreas in Type 1 Diabetes

Bionic Pancreas Research Group DOI: 10.1056/NEJMoa2205225

CLINICAL PROBLEM

Commercially available, hybrid closed-loop insulin-delivery systems require substantial patient input, including basal insulin rates to start therapy and meal carbohydrate counts to determine mealtime insulin doses. In contrast, the bionic pancreas, currently in development by various entities, is highly automated; its technology relies only on body weight to initiate treatment and determine doses and uses qualitative carbohydrate estimates rather than counts at mealtime. Trials comparing the bionic pancreas with standard insulin-delivery methods are needed.

CLINICAL TRIAL

Design: A multicenter, parallel-group, unblinded, randomized trial examined the efficacy and safety of a bionic pancreas as compared with standard care in children and adults with type 1 diabetes.

Intervention: 326 participants 6 to 79 years of age who had been using insulin for at least 1 year were assigned either to automated glucose control with the bionic pancreas (with insulin aspart or insulin lispro) or to standard care with their current insulin-delivery method (multiple injections, pump, or hybrid closed-loop system) plus a continuous glucose monitor. The primary outcome was the glycated hemoglobin level at 13 weeks.

RESULTS

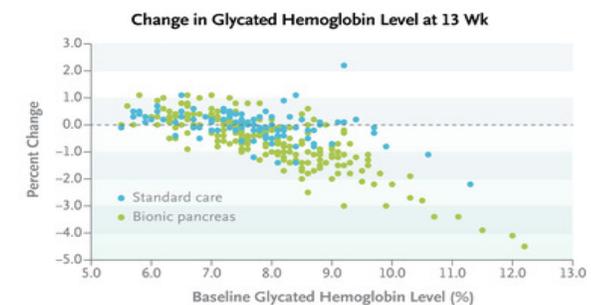
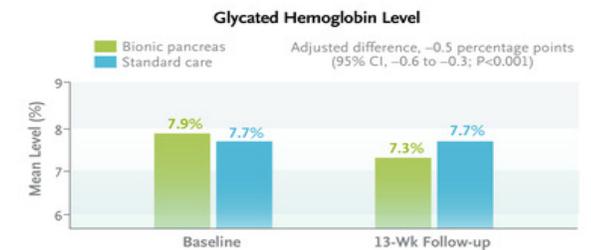
Efficacy: The mean glycated hemoglobin level decreased over the 13-week trial in the bionic-pancreas group and remained unchanged in the standard-care group, which resulted in a significant difference between the groups at 13 weeks.

Safety: The rate of severe hypoglycemia did not differ significantly between the groups. There were no episodes of diabetic ketoacidosis in either group.

LIMITATIONS

- Hypoglycemia as measured at baseline by continuous glucose monitors was infrequent; thus, the effects of the bionic pancreas on reducing the risk and severity of hypoglycemia could not be assessed.
- Approaches to managing and reporting hyperglycemia and ketosis differed between the two groups.

Links: [Full Article](#) | [NEJM Quick Take](#) | [Editorial](#)



CONCLUSIONS

In children and adults with type 1 diabetes, use of a bionic pancreas for 13 weeks resulted in a greater reduction in the glycated hemoglobin level than standard care, with no apparent safety concerns.

Les coups gagnants: crochet

3- HbA1c =utile pour comparer différentes populations et leurs soins

HbA1c standardisée peut servir à comparer des centres pédiatriques à travers le monde

Exemples des registres 'Sweet' et 'Capacity'

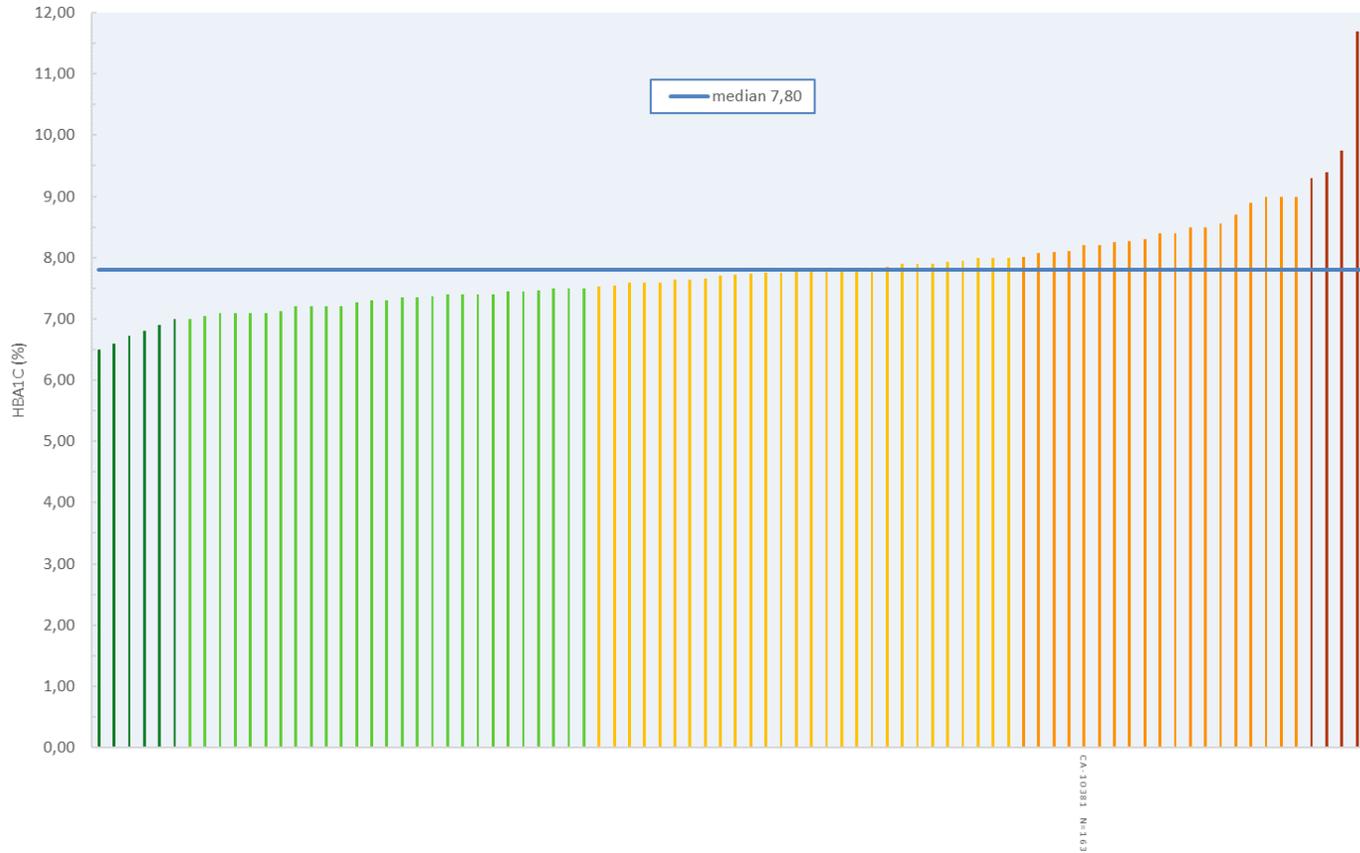


The SWEET Map
Worldwide 2019

Le Québec est sur la map!
Registre de données chez les enfants
avec le diabète et comparaison entre les centres

HbA1c: raw data, median of patients' medians

T1DM, 0-18y, 01/01/2019 - 31/12/2019



- **HbA1c-RAW:**
 HbA1c-values WITHOUT ANY STANDARDIZATION: in particular this view is useful regarding your own values. You can easily compare them with your own statistics
- Number of patients must be at least 20 for being displayed.

Capacity: le projet pan canadien

▼ Building CAPACity for pediatric diabetes research and quality improvement across Canada

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Summary

Although there have been many advances in diabetes care since insulin was discovered 100 years ago, youth with diabetes continue to have a higher risk of other health problems, a lower quality of life, and a shorter life span than their peers without diabetes. This health gap is likely in part due to suboptimal access to and delivery of their diabetes care, which is worse in disadvantaged populations across Canada. Our project will develop strategies to address these gaps. The Canadian Pediatric diabetes Consortium (CAPACity) is a network of 15 childhood diabetes centers from across Canada. We are partnering with patients/families and health care professionals to jointly design and develop a Canada-wide childhood

Pause de combat –quelques vignettes en divertissement

- Vignette 1: le syndrome du carnet de glycémies parfait

DEJEUNER	DINER	SOUPER	COUCHER
5.1	4,7	7,2	4,5
4,9	6,0	4,0	13 (Halloween)
5,1	6,4	4,7	7,1
5,5	3,9	6,7	5,4

13 ans diabete depuis 8 mois,

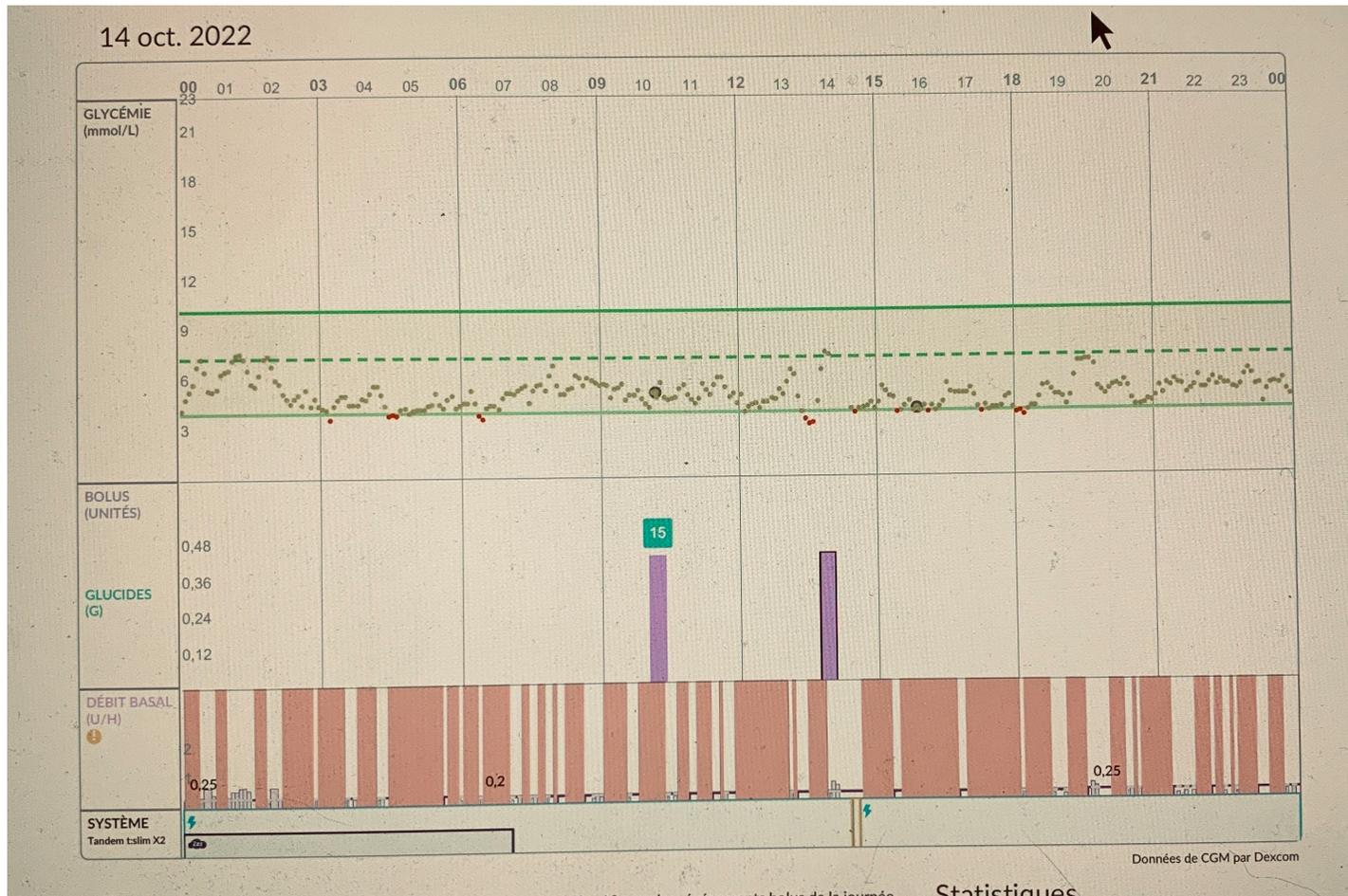
Pas de glucomètre lors de sa visite, mais on note perte de poids, polyurie nocturne...

SEULE l'HbA1c va trancher!

Résultat HbA1c CAPILLAIRE faite lors de la visite =12 %

Suite du divertissement

- Vignette 2: la pompe et son capteur..l'amour est aveugle..



Jeune de 9ans

Il appelle le service de garde, les glycémies du capteur seraient entre 4 et 7 mmol/l, signale des vomissements et la notion de gastro dans la famille proche. Mesures pour jours de maladie expliquées.

Finalement trop moche, arrive aux urgences: acidocétose

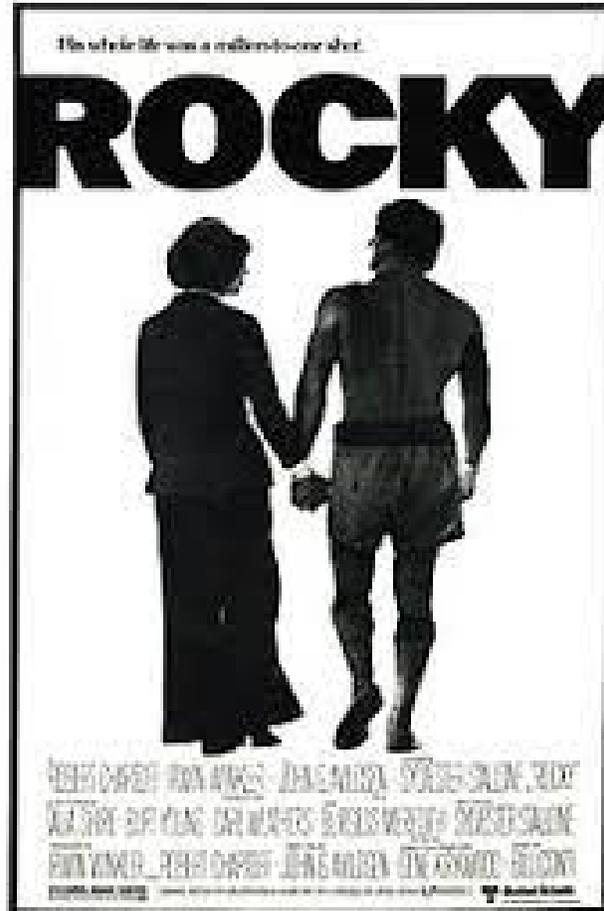
La fin du combat..

HbA1c

Diagnostic du diabète

Évaluer des nouvelles
thérapies (RCT)

Échelle populationnelle



TIR

Échelle individuelle:
Patient et soignant
mieux outillés

Prédiction complications
Incluant variabilité glycémique
Et hypoglycémie...

HbA1c et TIR main dans la main pour encore quelques années...?