

# DIABETES GOES TO COLLEGE:

## Update on DM in the College Student

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TYPE 1 DIABETES FOR 24 YEARS.

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ALL SPEAKERS: NO CONFLICTS OF INTEREST TO DISCLOSE.

## DIABETES GOES TO COLLEGE

### OBJECTIVES

1. Identify best practices in achieving the healthy transition of a student with DM from home to college health service care.
2. Review 3 components of individual care plans for students with DM.
3. Outline the elements essential to DM management.
4. Discuss the challenges faced by students with diabetes as they adjust to life on campus.

### THE PLAN FOR TODAY

- ▶ BRIEF REVIEW OF DIABETES MELLITUS-  
pathophysiology, treatment options, etc
- ▶ QUESTIONS AND ISSUES SPECIFIC TO COLLEGE  
STUDENTS WITH DM- INTERACTIVE DISCUSSION
- ▶ ?CASE PRESENTATION(S)- YOURS, MINE AND  
OURS!

# Diabetes Goes to College

## What is Diabetes?

# *Type 1*

# *Diabetes Mellitus*

- ◆ ~1,000,000 Americans
- ◆ destruction of pancreatic beta cells
- ◆ failure to produce insulin:
  - ◆ autoimmune
  - ◆ beta cell toxins
  - ◆ idiopathic



# *Pathophysiology of Type 1 Diabetes*

**Autoimmune Destruction of  $\beta$  Cells**

**Lack of Insulin**



**Unrestrained Lipolysis**



**Ketone Formation**

# *Medications for the Treatment of Type 1 Diabetes*

**Insulin**

(oral agents not indicated)



# ***Type 2 Diabetes Mellitus***

- ◆ ~29 Million Americans
- ◆ arises because of insulin resistance and *relative* insulin deficiency
- ◆ beta cell destruction is *not* an early pathologic feature





# *Pathophysiology of Type 2 Diabetes*

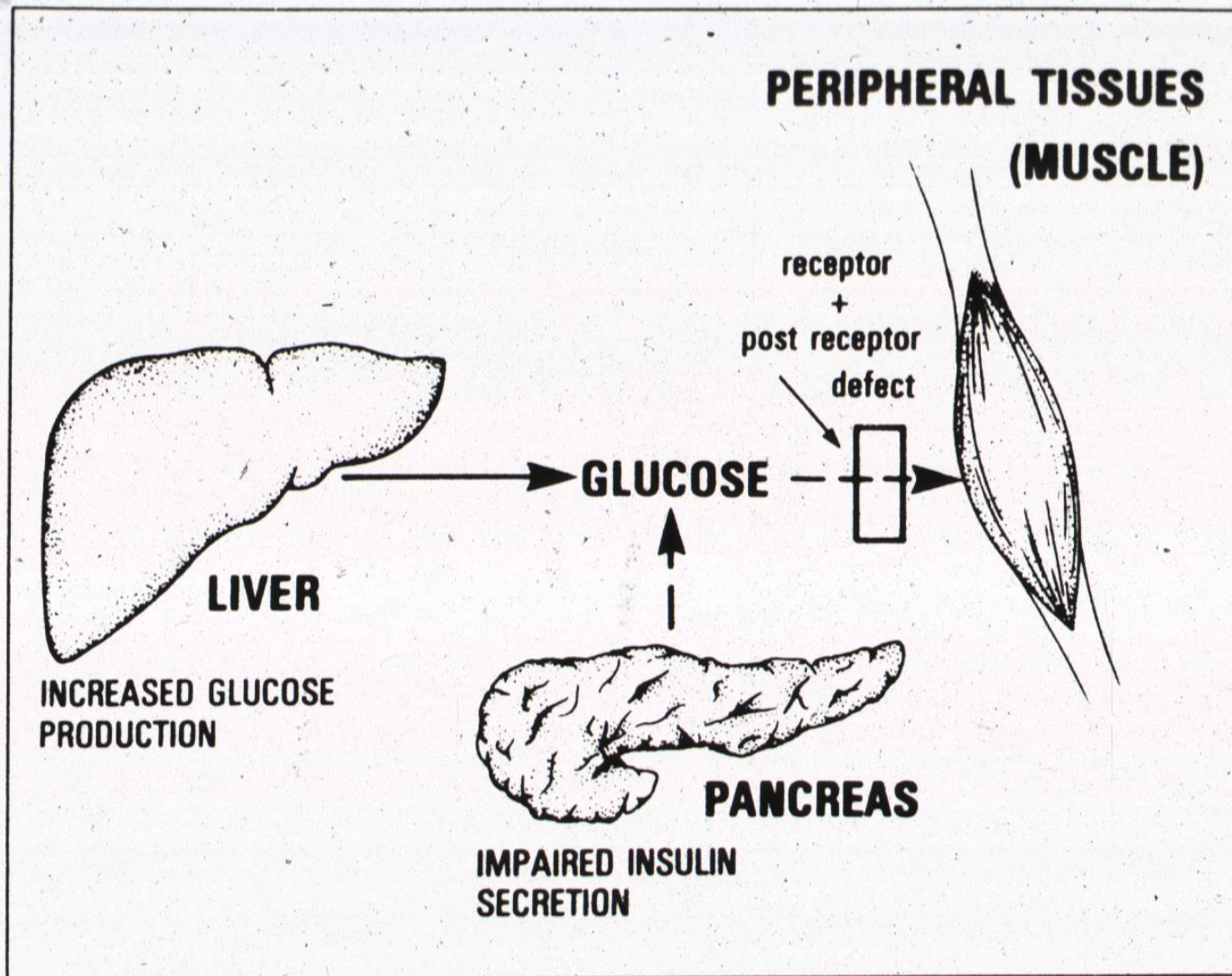
## **Insulin Resistance**

at level of muscle and other tissues

## **Relative $\beta$ Cell Insufficiency**

Insulin levels can be Low, Normal, or High

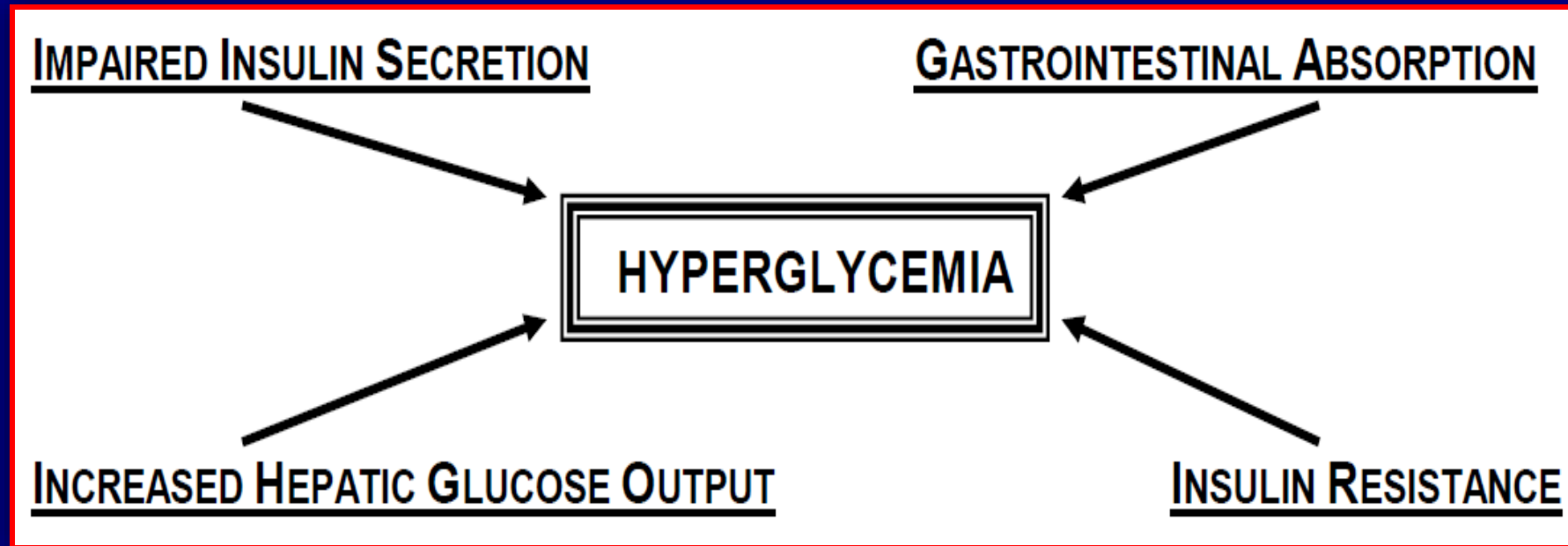
## **Elevated Hepatic Glucose Output**



**Figure 1.** Summary of the metabolic abnormalities in NIDDM that contribute to the hyperglycemia. Increased hepatic glucose production, impaired insulin secretion, and insulin resistance due to receptor and postreceptor defects all combine to generate the hyperglycemic state.



# The Route to Hyperglycemia in Type 2 Diabetes



# Pathogenesis of Hyperglycemia in Type 2 Diabetes Mellitus

Impaired Insulin Secretion

Sulfonylureas

Gastrointestinal Absorption

Alpha-glucosidase inhibitors

Hyperglycemia

Thiazoladinediones (Glitazones)

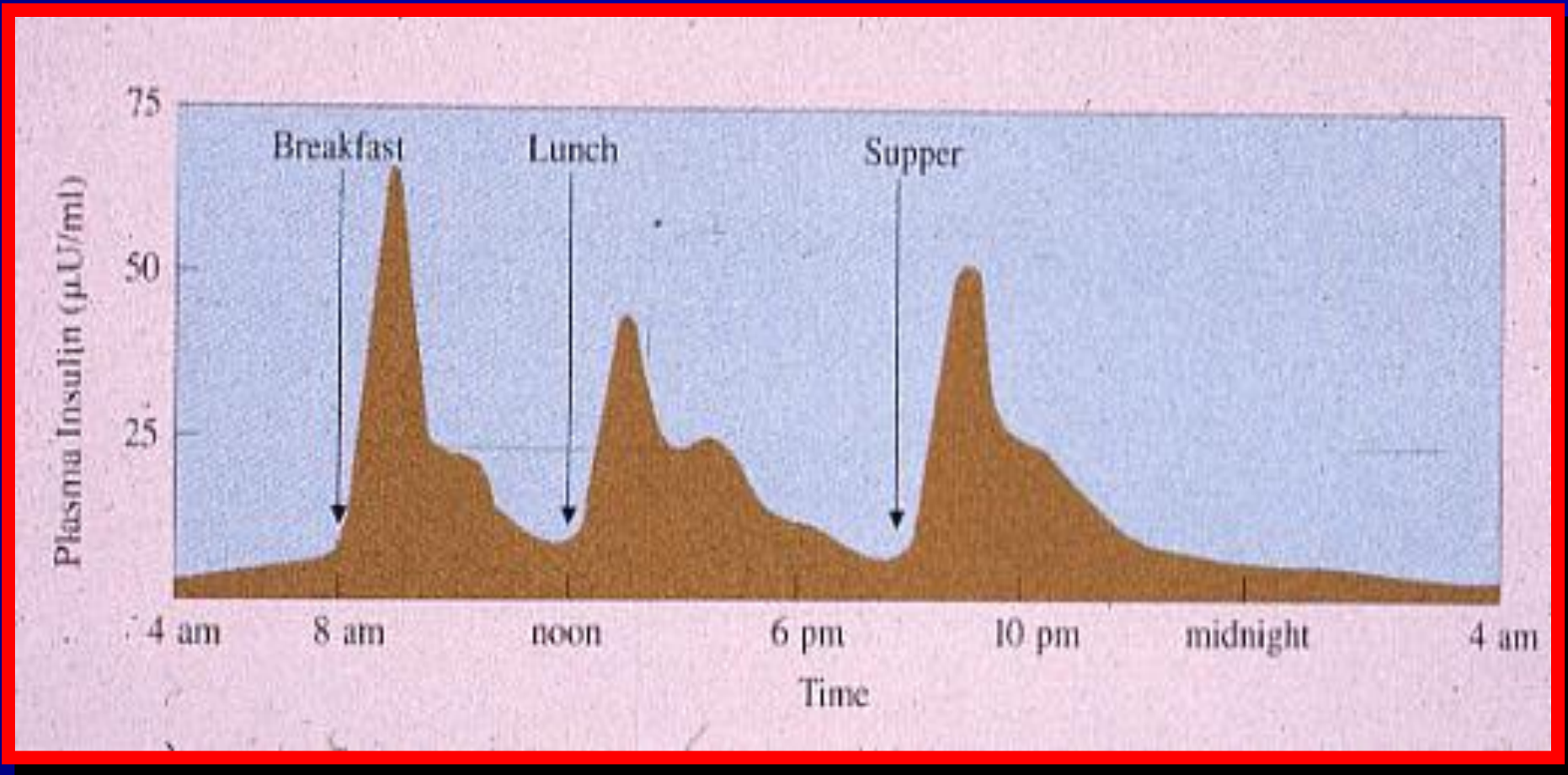
Metformin

Increased Hepatic Glucose Output

Insulin Resistance



# Insulin Levels in Individuals without Diabetes



## REFERENCES

- ▶ Mellinger, D. **Preparing Students With Diabetes for Life at College.** Diabetes Care Sept 2003 Vol 26, No. 9 2675-78.
- ▶ College-bound: Preparing to Take your Diabetes Away From Home:  
[http://www.joslin.org/info/college\\_bound\\_preparing\\_to\\_take\\_your\\_diabetes\\_away\\_from\\_home.html](http://www.joslin.org/info/college_bound_preparing_to_take_your_diabetes_away_from_home.html)
- ▶ **Going to College with Diabetes: A Self Advocacy Guide for Students**  
<http://main.diabetes.org/dorg/PDFs/Advocacy/Discrimination/going-to-college-with-diabetes.pdf>
- ▶ **Albany Medical Center Goodman Diabetes Service DM educational links:**  
[www.amc.edu/Patient/services/endocrinology/diabetes\\_education.cfm](http://www.amc.edu/Patient/services/endocrinology/diabetes_education.cfm)

## DIABETES GOES TO COLLEGE

### STUDENT SPECIFIC DM ISSUES

- ▶ Should I let housing/residential life know about my diabetes before I arrive? What about the health center?
- ▶ What supplies should I bring with me? And how much?
- ▶ What about storing my insulin and needles? Locked? Fridge?
- ▶ How will I dispose of needles in my dorm room?

## DIABETES GOES TO COLLEGE

### STUDENT SPECIFIC DM ISSUES (cont)

- ▶ Who do I tell about my diabetes? My roommate?  
The RA? My professors?
- ▶ What about partying?
- ▶ What if I go low (have hypoglycemia) in the middle of the night?



## DIABETES GOES TO COLLEGE

### HEALTH CENTER SPECIFIC DM ISSUES

- ▶ Should every student with DM be “flagged”?
- ▶ Should students with DM establish with endocrinologist in the college area?
- ▶ Should we obtain FSBG (finger stick blood glucose) every time a diabetic student comes into health center? How about urine for ketones?

### CASE PRESENTATION

- ▶ 25 yo female c/o urinary frequency with irritation and small voids x 2 -3 days.
- ▶ She denies vaginal d/c, itching or burning.
- ▶ No prior UTI.
- ▶ She denies nausea, vomiting, fever, chills, abd or back pain.
- ▶ Denies ST, cough or other URI sx.

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### CASE PRESENTATION (cont)

- ▶ Diabetes since age 11 and wears a pump.
- ▶ Checks her FSBG approx. 6-7 x/day
- ▶ Recently FSBG's running in low 200's.
- ▶ Denies h/o DKA (diabetic ketoacidosis) except may when first diagnosed.
- ▶ Believes she's been drinking enough fluids today.

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### CASE PRESENTATION (cont)

#### PE/LABS:

Well appearing in NAD, Temp: 98.1

BP: 116/80, P: 115, BMI: 22.7

Abd: nl BS, soft, nontender, no masses, no CVA tenderness, pump in place with no surrounding erythema at site of insertion

- ▶ Urine dip: Spec Grav: 1.025, large ketones, other neg
- ▶ Fingertick BG: 216 (ate lunch 2 h ago)

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### CASE PRESENTATION (cont)

ASSESSMENT: ? UTI/ DM

PLAN:

- ▶ Urine culture sent out
- ▶ Macrobid 100 mg bid x 5 days
- ▶ Increase fluids, monitor ketones, FSBG
- ▶ Follow up appt tomorrow- recheck urine then

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### CASE PRESENTATION (cont)

- ▶ Follow up visit – Pt continues to have slight urinary sx. She reports no ketones in urine last night and FSBS was below 200.
- ▶ PE: well appearing, T: 98.3, P: 99, BP: 133/71
- ▶ Labs: FSBG: 222, Urine: SG- 1.010, Glu +, Ket neg

## DIABETES GOES TO COLLEGE

### CASE PRESENTATION (cont)

#### PLAN:

- Pt advised to cont. Macrobid till urine cx returns
- Advised to establish with Endo in area
- Follow up as needed (will call with culture results)

**ADDENDUM:** Urine cx = negative growth

Pt was notified and reports cont intermittent sx-sugars "OK".

advised Endo ASAP

# Supporting the young adult

**with diabetes:** Understanding the unique needs of this population and resources available to both students and providers.





# RESOURCES FOR YOU

- Information on how to become a faculty advisor to your campus CDN Chapter
- Diabetes Cheat Sheet for Professors
- Order CDN brochures
- Sample email to students with diabetes on campus
- Legal rights of students with diabetes on campus

[Collegediabetesnetwork.org/content/campus-health](http://Collegediabetesnetwork.org/content/campus-health)



# RESOURCES FOR YOUR STUDENTS

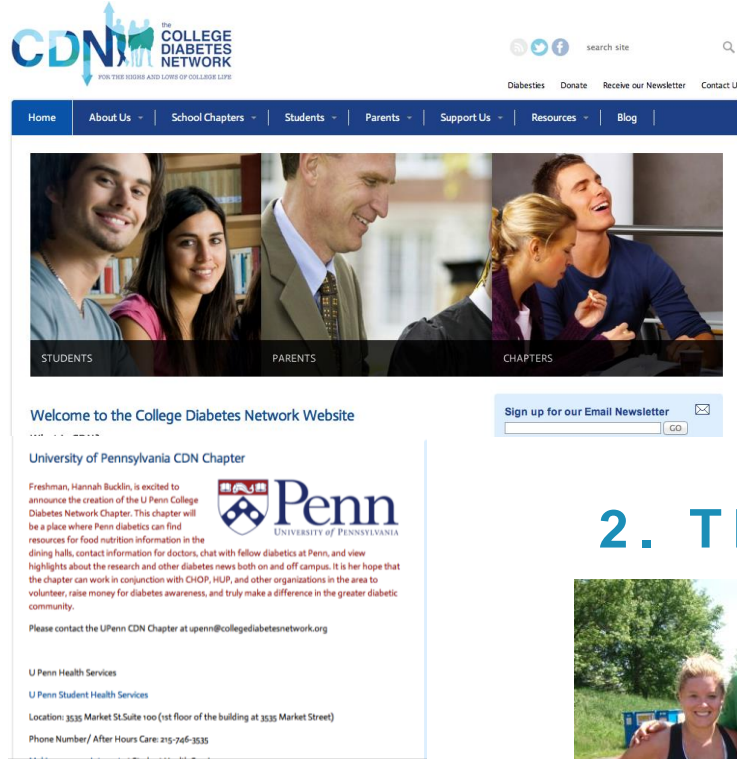
- Information and resources to start a chapter on campus
- Scholarship Information
- Job/Internship Openings
- Preparing for College Checklist
- How to talk to friends and roommates about diabetes in college
- Drinking and Diabetes
- Sick Days with Type 1

[Collegediabetesnetwork.org](http://Collegediabetesnetwork.org)

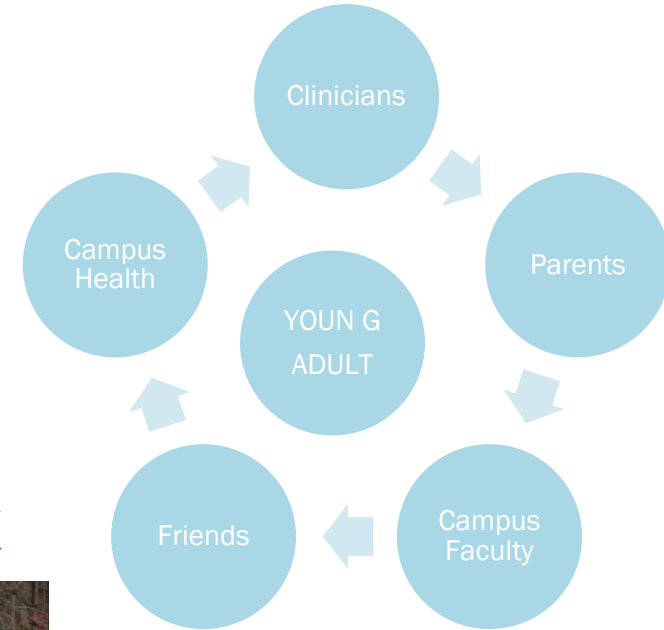


# CDN'S MODEL

## 1. THE TOOLS



## 3. THE ECOSYSTEM



## 2. THE NETWORK



# CHAPTERS

Support networks on campus created and run by students



## Chapters provide:

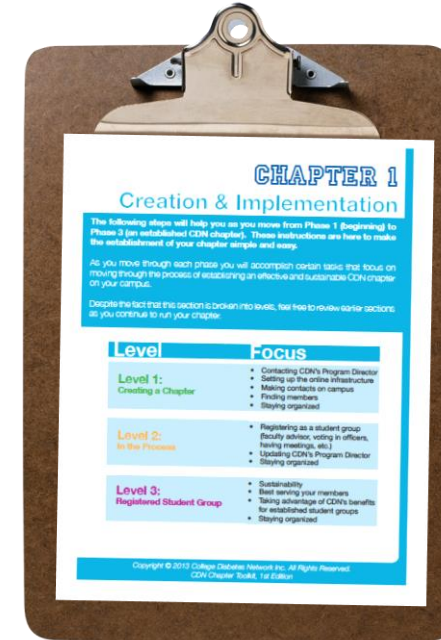
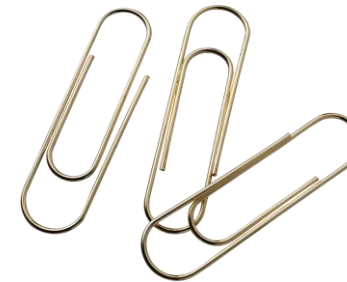
- A safety net of people to call
- A way to meet other students juggling school and diabetes
- A place to share tips and get acquainted with local resources
- A chance to take a leadership role
- An opportunity for community outreach
- Access to the latest diabetes technology
- Invitations to events on campus

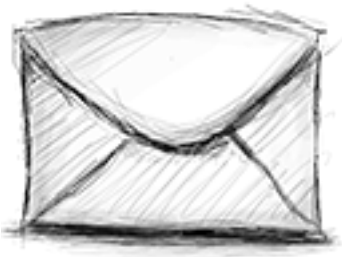


# CHAPTER RESOURCES

We provide chapters with:

- Chapter Webpage
- Chapter Email Address
- Personal support from CDN's Program Director
- Materials
  - Chapter Toolkit – instructions on how to create and run a sustainable chapter
  - Includes templates, instructions, documents, brochures, flyers, forms

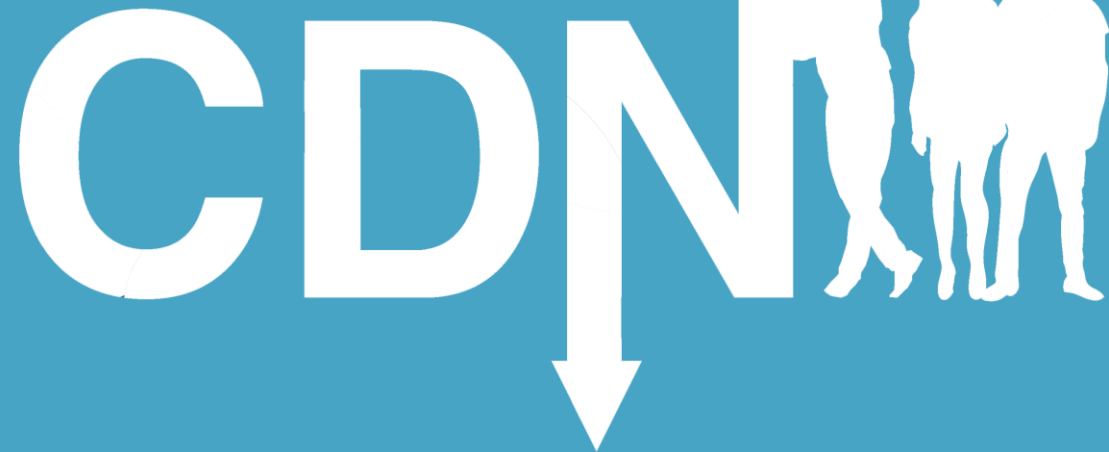




# Stay in Touch!

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