



PAL

Personal Assistant for a healthy Lifestyle



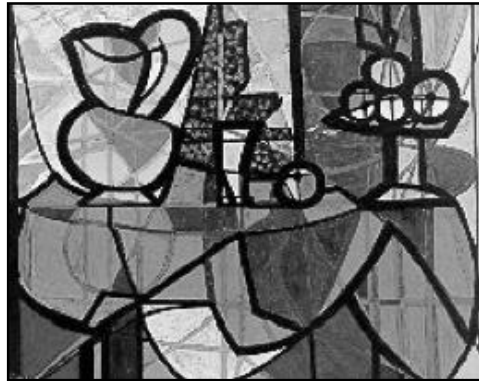
PAL

a robot buddy that provides edutainment
to support children's coping with diabetes
at the hospital, camps and at home

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1. Diabetes explained
2. The burden of diabetes in children
3. Guidelines for Diabetes Education ISPAD
4. Coping and edutainment

Energy supply



Food

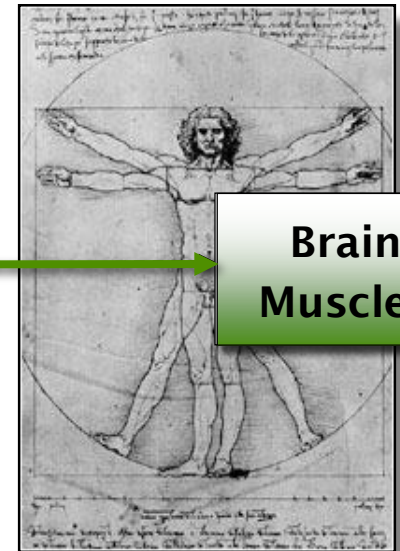
Glucose

Proteins

Fat

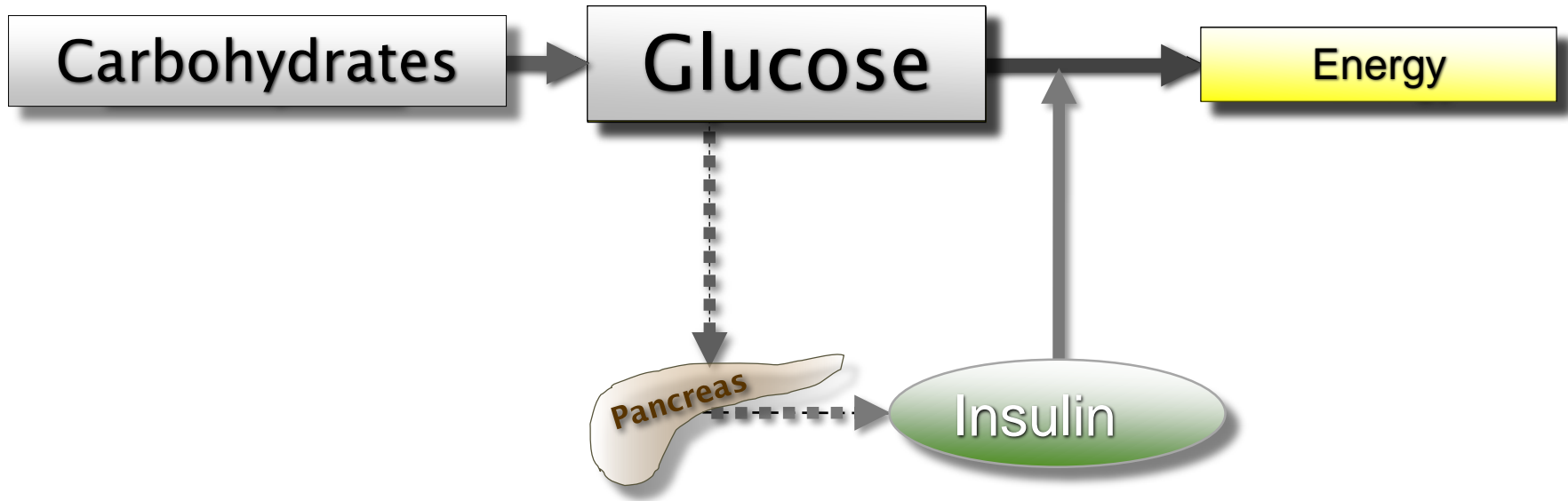
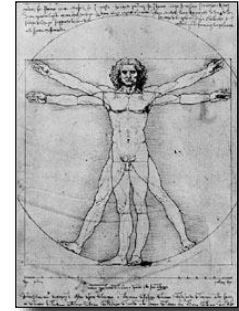
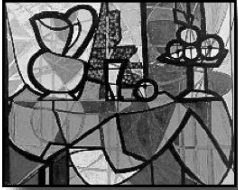
Insulin

**Brain
Muscles**

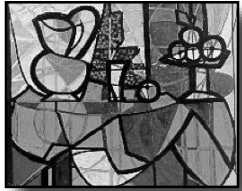


Body

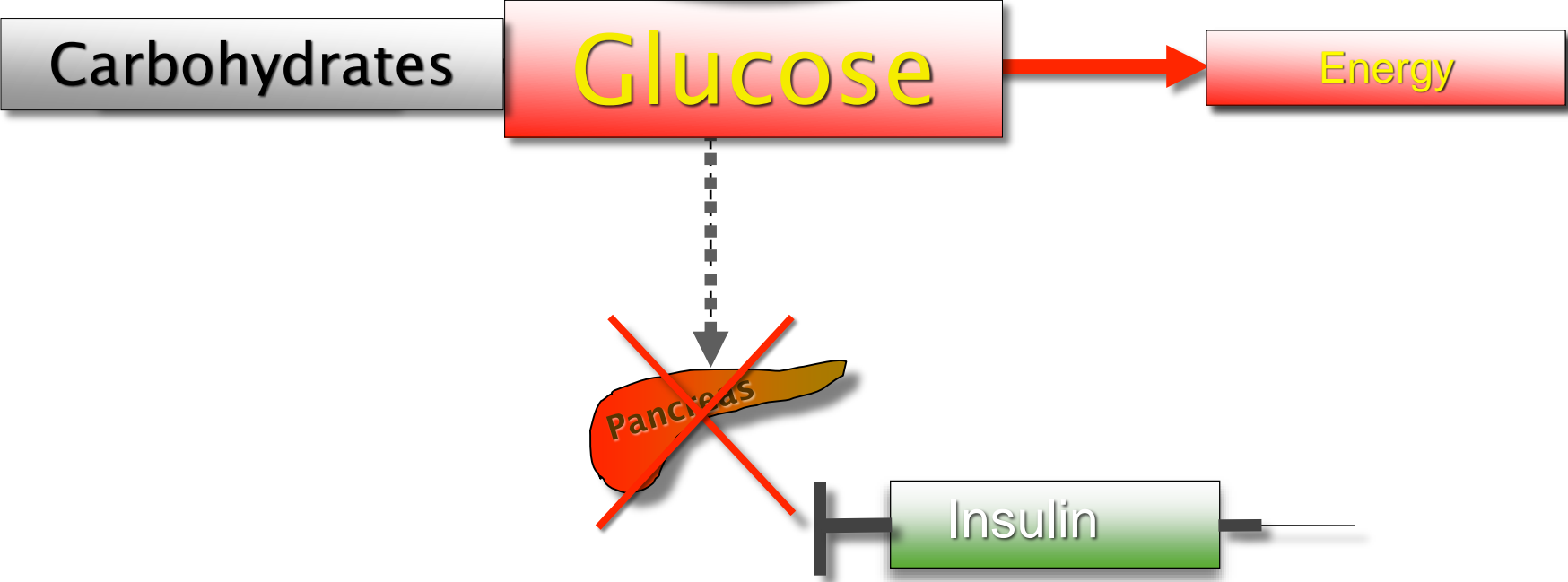
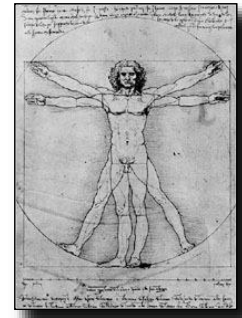
Normal



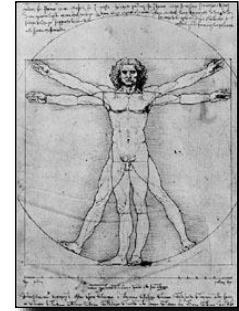
Diabetes type 1



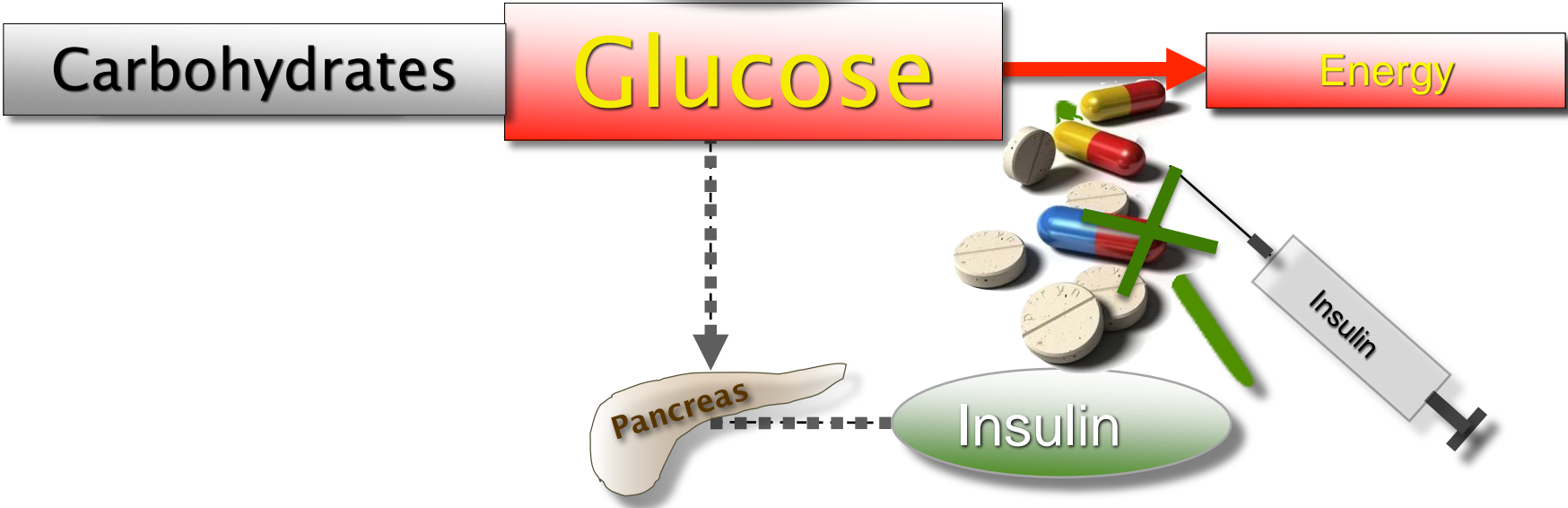
Diabetes
type 1



Diabetes type 2



Diabetes
type 2



Treatment

Insulin injections

2 times a day

2x Insulin Mixture (% Short acting / % Long acting)

4 times a day

3x Short acting Insulin + 1x Long acting insulin

Continuously

Short acting Insulin in an Insulin pump

Insulin injections



Insulin pump



Treatment

Insulin injections

2 times a day

2x Insulin Mixture (% Short acting / % Long acting)

4 times a day

3x Short acting Insulin + 1x Long acting insulin

Continuously

Short acting Insulin in an Insulin pump

Diet

Life style

Education

Sport

Alcohol

Excercise

Emotions

Disease

2. The burden of diabetes in children

Practical issues

102.200 injections (70y x 365d x 4)

127.750 - 153.300 finger pricks (70y x 365d x 5 à 6)

Carb counting for every meal, every snack

Carrying glucometer, teststrips, dextro tablets

Feeling tired etc, when too high - Feeling angry, hungry etc when too low



The **burden** of diabetes in children

Practical issues

Psychological adjustment ↑

Stress ↑

Psychiatric disorders ↑

Neurocognitive disorders ↑

Educational functioning ↓

Family dynamics and problems ↑

Social support, coping mechanisms ↓

Quality of life ↓

Behavioral interventions ↑

- Accepting the critical role of continued parental involvement and yet promoting independent, responsible self-management appropriate to the level of maturity and understanding (72, 74)
- Understanding that knowledge about diabetes in adolescents is predictive of better self-care and (metabolic) control but the association is modest
- Discussing emotional and peer group conflicts
- Discussion weight control and preventing disordered eating (75, 76)
- Teaching problem-solving strategies for dealing with dietary indiscretions, illness, hypoglycemia, blood glucose fluctuation due to puberty, sports, smoking, alcohol, drugs, and sexual health
- Negotiating targets, goals and priorities and ensuring that the tasks taken on by the adolescent are understood, accepted, and achievable (77)
- Understanding that omission of insulin is not uncommon. The opportunity should be grasped for non-judgmental discussion about this
- Developing strategies to manage transition to adult services (78).

Educational interventions which have been shown to be most effective are most likely to use

- be based on clear theoretical psycho-educational principles (E)
- be integrated into routine clinical care (e.g., as an essential integral part of intensive insulin management) (A)
- be referred to as an ongoing process of provision of individualized self-management and psychosocial support (E)
- involve the continuing responsibility of parents and other carers throughout adolescence (B)
- make use of cognitive behavioral techniques most often related to **problem-solving**, **goal setting**, **communication skills**, **motivational interviewing**, **family conflict resolution**, **coping skills** and stress **stress management** vehicles for educational motivation (A)

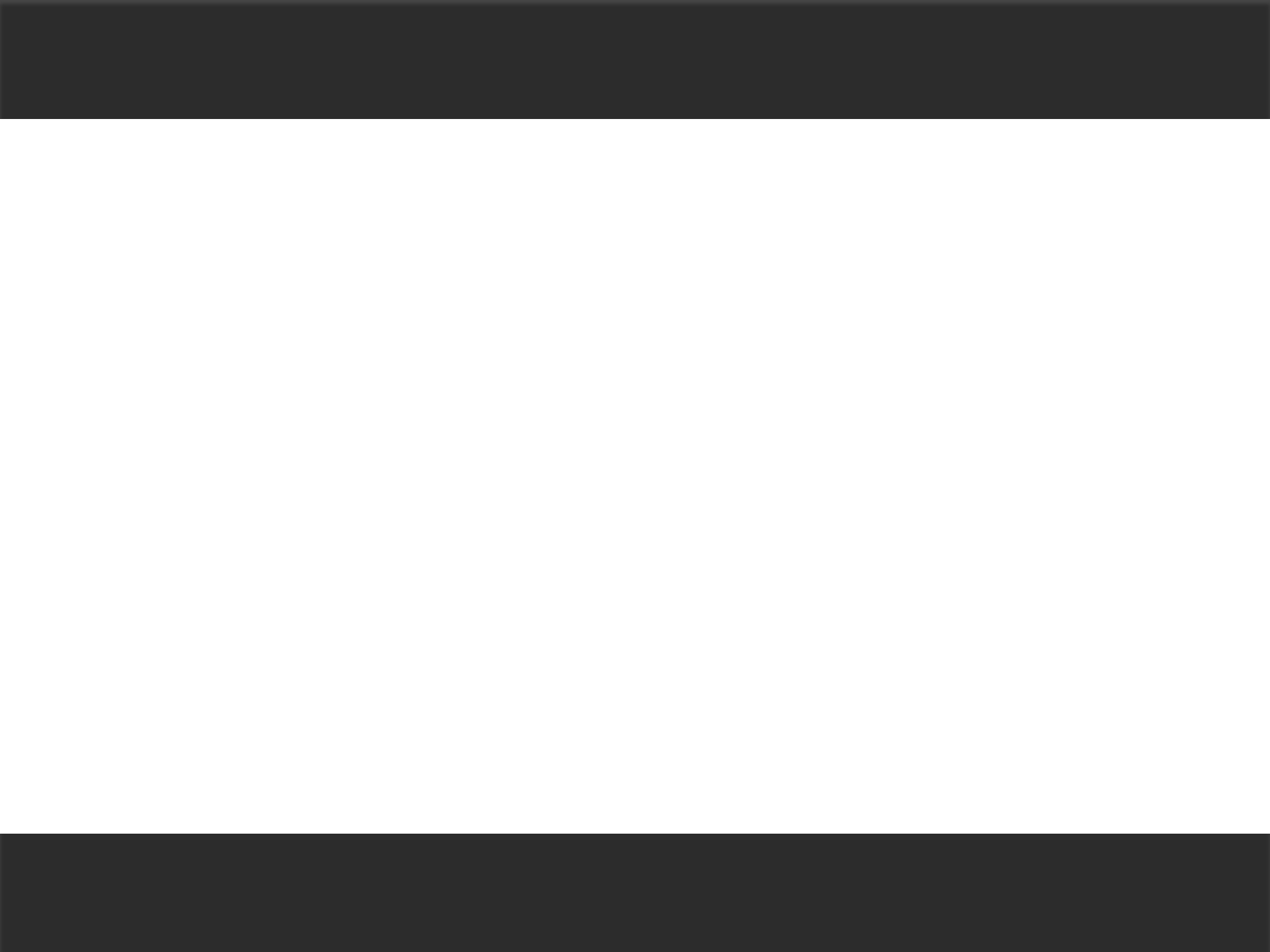
Most important in education

- Self-management
- Knowledge
- Targets and goals
- Priorities

4. Lessons learned from Aliz-E

- A personalized robot stimulates education
- Interaction is stimulated by edutainment
(Quiz, sorting games, dancing)
- Emotional aspects are more important than we thought
- Bonding between child and robot

the child and robot became “pals”....



Questions or remarks?