

MED axioms

MED001+0.ax Physiology Diabetes Mellitus type 2

Physiological mechanisms of diabetes mellitus type 2

$\forall x: \neg \text{gt}(x, x)$ fof(irreflexivity_gt, axiom)
 $\forall x, y, z: ((\text{gt}(x, y) \text{ and } \text{gt}(y, z)) \Rightarrow \text{gt}(x, z))$ fof(transitivity_gt, axiom)
 $\forall x_0: (\text{bcapacityne}(x_0) \text{ or } \text{bcapacityex}(x_0) \text{ or } \text{bcapacitysn}(x_0))$ fof(xorcapacity₁, axiom)
 $\forall x_0: (\neg \text{bcapacityne}(x_0) \text{ or } \neg \text{bcapacityex}(x_0))$ fof(xorcapacity₂, axiom)
 $\forall x_0: (\neg \text{bcapacityne}(x_0) \text{ or } \neg \text{bcapacitysn}(x_0))$ fof(xorcapacity₃, axiom)
 $\forall x_0: (\neg \text{bcapacityex}(x_0) \text{ or } \neg \text{bcapacitysn}(x_0))$ fof(xorcapacity₄, axiom)
 $\forall x_0: (\text{conditionhyper}(x_0) \text{ or } \text{conditionhypo}(x_0) \text{ or } \text{conditionnormo}(x_0))$ fof(xorcondition₁, axiom)
 $\forall x_0: (\neg \text{conditionhyper}(x_0) \text{ or } \neg \text{conditionhypo}(x_0))$ fof(xorcondition₂, axiom)
 $\forall x_0: (\neg \text{conditionhyper}(x_0) \text{ or } \neg \text{conditionnormo}(x_0))$ fof(xorcondition₃, axiom)
 $\forall x_0: (\neg \text{conditionhypo}(x_0) \text{ or } \neg \text{conditionnormo}(x_0))$ fof(xorcondition₄, axiom)
 $\forall x_0: (\forall x_1: (\neg \text{gt}(x_0, x_1) \Rightarrow \text{drugi}(x_1)) \Rightarrow \forall x_1: (\neg \text{gt}(x_0, x_1) \Rightarrow (\text{uptakelg}(x_1) \text{ and } \text{uptakepg}(x_1))))$ fof(insulin_effect, axiom)
 $\forall x_0, x_1: (\neg \text{gt}(x_0, x_1) \Rightarrow (\text{uptakelg}(x_1) \Rightarrow \neg \text{releaselg}(x_1)))$ fof(liver_glucose, axiom)
 $\forall x_0: ((\forall x_1: (\neg \text{gt}(x_0, x_1) \Rightarrow \text{drugsu}(x_1)) \text{ and } \neg \text{bcapacityex}(x_0)) \Rightarrow \forall x_1: (\neg \text{gt}(x_0, x_1) \Rightarrow \text{bsecretioni}(x_1)))$ fof(sulfonylurea, axiom)
 $\forall x_0: (\forall x_1: (\neg \text{gt}(x_0, x_1) \Rightarrow \text{drugbg}(x_1)) \Rightarrow \forall x_1: (\neg \text{gt}(x_0, x_1) \Rightarrow \neg \text{releaselg}(x_1)))$ fof(biguanide_effect, axiom)
 $\forall x_0: ((\forall x_1: (\neg \text{gt}(x_0, x_1) \Rightarrow \text{bsecretioni}(x_1)) \text{ and } \text{bcapacitysn}(x_0) \text{ and } \text{qilt}_{27}(x_0) \text{ and } \forall x_1: (\text{gt}(x_0, x_1) \Rightarrow \text{conditionhyper}(x_1)))$
 $\forall x_1: (\neg \text{gt}(x_0, x_1) \Rightarrow \text{conditionnormo}(x_1)))$ fof(sn_cure₁, axiom)
 $\forall x_0: ((\forall x_1: (\neg \text{gt}(x_0, x_1) \Rightarrow \neg \text{releaselg}(x_1)) \text{ and } \text{bcapacitysn}(x_0) \text{ and } \neg \text{qilt}_{27}(x_0) \text{ and } \forall x_1: (\text{gt}(x_0, x_1) \Rightarrow \text{conditionhyper}(x_1)))$
 $\forall x_1: (\neg \text{gt}(x_0, x_1) \Rightarrow \text{conditionnormo}(x_1)))$ fof(sn_cure₂, axiom)
 $\forall x_0: (((\forall x_1: (\neg \text{gt}(x_0, x_1) \Rightarrow \neg \text{releaselg}(x_1)) \text{ or } \forall x_1: (\neg \text{gt}(x_0, x_1) \Rightarrow \text{uptakepg}(x_1))) \text{ and } \text{bcapacityne}(x_0) \text{ and } \forall x_1: (\neg \text{gt}(x_0, x_1) \Rightarrow \text{bsecretioni}(x_1)) \text{ and } \forall x_1: (\text{gt}(x_0, x_1) \Rightarrow \text{conditionhyper}(x_1))) \Rightarrow \forall x_1: (\neg \text{gt}(x_0, x_1) \Rightarrow \text{conditionnormo}(x_1)))$ fof(ne_cure, axiom)
 $\forall x_0: ((\forall x_1: (\neg \text{gt}(x_0, x_1) \Rightarrow \text{uptakelg}(x_1)) \text{ and } \forall x_1: (\neg \text{gt}(x_0, x_1) \Rightarrow \text{uptakepg}(x_1)) \text{ and } \text{bcapacityex}(x_0) \text{ and } \forall x_1: (\text{gt}(x_0, x_1) \Rightarrow \text{conditionhyper}(x_1))) \Rightarrow \forall x_1: (\neg \text{gt}(x_0, x_1) \Rightarrow (\text{conditionnormo}(x_1) \text{ or } \text{conditionhypo}(x_1))))$ fof(ex_cure, axiom)

MED problems

MED001+1.p Sulfonylurea treatment

Whether or not patients with subnormal production of glucose in the B-cells and a low QI index are cured with sulfonylurea.

include('Axioms/MED001+0.ax')

$(\forall x_0: (\neg \text{gt}(n_0, x_0) \Rightarrow \text{drugsu}(x_0)) \text{ and } \forall x_0: (\text{gt}(n_0, x_0) \Rightarrow \text{conditionhyper}(x_0)) \text{ and } \text{bcapacitysn}(n_0) \text{ and } \text{qilt}_{27}(n_0)) \Rightarrow \forall x_0: (\neg \text{gt}(n_0, x_0) \Rightarrow \text{conditionnormo}(x_0))$ fof(treatment_{sn2}, conjecture)

MED002+1.p Combined biguanide and sulfonylurea treatment

Whether or not patients with nearly-exhausted production of glucose in the B-cells are cured with a biguanide and sulfonylurea combination therapy.

include('Axioms/MED001+0.ax')

$(\forall x_0: (\neg \text{gt}(n_0, x_0) \Rightarrow (\text{drugbg}(x_0) \text{ and } \text{drugsu}(x_0))) \text{ and } \forall x_0: (\text{gt}(n_0, x_0) \Rightarrow \text{conditionhyper}(x_0)) \text{ and } \text{bcapacityne}(n_0)) \Rightarrow \forall x_0: (\neg \text{gt}(n_0, x_0) \Rightarrow \text{conditionnormo}(x_0))$ fof(treatment_{ne}, conjecture)

MED003+1.p Insulin treatment

Whether or not patients with exhausted production of glucose in the B-cells are at least not hyperglycaemic afterwards.

include('Axioms/MED001+0.ax')

$(\forall x_0: (\neg \text{gt}(n_0, x_0) \Rightarrow \text{drugi}(x_0)) \text{ and } \forall x_0: (\text{gt}(n_0, x_0) \Rightarrow \text{conditionhyper}(x_0)) \text{ and } \text{bcapacityex}(n_0)) \Rightarrow \forall x_0: (\neg \text{gt}(n_0, x_0) \Rightarrow (\text{conditionnormo}(x_0) \text{ or } \text{conditionhypo}(x_0)))$ fof(treatment_{ex}, conjecture)

MED004+1.p No suitable therapy for patients with exhausted B-cells

There is not a suitable therapy for patients with exhausted B-cells available.

include('Axioms/MED001+0.ax')

$(\forall x_0: (\neg \text{gt}(n_0, x_0) \Rightarrow (\text{drugi}(x_0) \text{ and } \text{drugsu}(x_0) \text{ and } \text{drugbg}(x_0))) \text{ and } \forall x_0: (\text{gt}(n_0, x_0) \Rightarrow \text{conditionhyper}(x_0)) \text{ and } \text{bcapacitysn}(n_0)) \Rightarrow \forall x_0: (\neg \text{gt}(n_0, x_0) \Rightarrow \text{conditionnormo}(x_0))$ fof(treatment_{ex_sub}, conjecture)

MED005+1.p Unsuccessful diet treatment

Unsuccessful treatment of diet requires that medical management moves to at least oral diabetics.

include('Axioms/MED001+0.ax')

include('Axioms/MED001+1.ax')

$(s_0(n_0) \text{ and } \forall x_0: (\text{gt}(n_0, x_0) \Rightarrow \text{conditionhyper}(x_0))) \Rightarrow \exists x_0: (\neg \text{gt}(n_0, x_0) \text{ and } s_1(x_0) \text{ and } \forall x_1: (\text{gt}(x_0, x_1) \Rightarrow \text{conditionhyper}(x_1)))$ fof(transs0s1, conjecture)

MED006+1.p Unsuccessful s1-qilt27 treatment - single oral anti-diabetic

Unsuccessful treatment with single oral anti-diabetic for patients with QI less than 27 deductively follows in completed theory.

include('Axioms/MED001+0.ax')

include('Axioms/MED001+1.ax')

$(s_1(n_0) \text{ and } \forall x_0: (\text{gt}(n_0, x_0) \Rightarrow \text{conditionhyper}(x_0))) \text{ and } \neg \text{bcapacitysn}(n_0) \text{ and } \text{qilt}_{27}(n_0) \Rightarrow \neg \forall x_0: (\neg \text{gt}(n_0, x_0) \Rightarrow \text{conditionnormo}(x_0))$ fof(unsuccessfuls1_qilt27, conjecture)

MED007+1.p Unsuccessful s1-qilt27 treatment next step

After unsuccessful treatment with single oral anti-diabetic for patients with QI less than 27 medical management moves to next step.

include('Axioms/MED001+0.ax')

include('Axioms/MED001+1.ax')

$(s_1(n_0) \text{ and } \forall x_0: (\text{gt}(n_0, x_0) \Rightarrow \text{conditionhyper}(x_0))) \text{ and } \neg \text{bcapacitysn}(n_0) \text{ and } \text{qilt}_{27}(n_0) \Rightarrow \exists x_0: (\neg \text{gt}(n_0, x_0) \text{ and } s_2(x_0) \text{ and } \text{conditionhyper}(x_1)) \text{ and } (\text{bcapacityne}(x_0) \text{ or } \text{bcapacityex}(x_0))$ fof(transs1s2_qilt27, conjecture)

MED008+1.p Unsuccessful s1-qige27 treatment

Unsuccessful treatment with single oral anti-diabetic for patients with QI greater equal than 27 deductively follows in completed theory.

include('Axioms/MED001+0.ax')

include('Axioms/MED001+1.ax')

$(s_1(n_0) \text{ and } \forall x_0: (\text{gt}(n_0, x_0) \Rightarrow \text{conditionhyper}(x_0))) \text{ and } \neg \text{bcapacitysn}(n_0) \text{ and } \neg \text{qilt}_{27}(n_0) \Rightarrow \neg \forall x_0: (\neg \text{gt}(n_0, x_0) \Rightarrow \text{conditionnormo}(x_0))$ fof(unsuccessfuls1_qige27, conjecture)

MED009+1.p Unsuccessful s1-qige27 treatment - next step

After unsuccessful treatment with single oral anti-diabetic for patients with QI greater equal than 27 medical management moves to next step.

include('Axioms/MED001+0.ax')

include('Axioms/MED001+1.ax')

$(s_1(n_0) \text{ and } \forall x_0: (\text{gt}(n_0, x_0) \Rightarrow \text{conditionhyper}(x_0))) \text{ and } \neg \text{bcapacitysn}(n_0) \text{ and } \neg \text{qilt}_{27}(n_0) \Rightarrow \exists x_0: (\neg \text{gt}(n_0, x_0) \text{ and } s_2(x_0) \text{ and } \text{conditionhyper}(x_1)) \text{ and } (\text{bcapacityne}(x_0) \text{ or } \text{bcapacityex}(x_0))$ fof(transs1s2_qige27, conjecture)

MED010+1.p Unsuccessful s1-qilt27 treatment - two oral anti-diabetic

After unsuccessful treatment with two oral anti-diabetic medical management moves to next step.

include('Axioms/MED001+0.ax')

include('Axioms/MED001+1.ax')

$(s_2(n_0) \text{ and } \forall x_0: (\text{gt}(n_0, x_0) \Rightarrow \text{conditionhyper}(x_0))) \text{ and } \text{bcapacityex}(n_0) \Rightarrow \exists x_0: (\neg \text{gt}(n_0, x_0) \text{ and } s_3(x_0) \text{ and } \forall x_1: (\text{gt}(x_0, x_1) \text{ and } \text{conditionhyper}(x_1)) \text{ and } \text{bcapacityex}(x_0))$ fof(unsuccesfuls2, conjecture)

MED011+1.p Satisfiability of medical subject headings axioms

include('Axioms/MED002+0.ax')

MED012+1.p Physiology Diabetes Mellitus type 2

include('Axioms/MED001+0.ax')

include('Axioms/MED001+1.ax')