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Doses

Technology of hospital pharmaceutics

1. Adults

Recommended therapeutic doses for adults

Recommended therapeutic doses for adults = Table IV of the 2009 Czech Pharmacopoeia

— Unless otherwise stated, the dose is given in grams

— They correspond to the average dosage

— Indicative/standard dosage

— It is possible to exceed them, but only within the limit of maximum doses, in such case the pharmacist is not obliged to contact the prescribing doctor

— These are the values that are used to calculate the recommended doses for children

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Maximum doses of drugs for adults

Doses that the pharmacist must not exceed when dispensing medicines for both
- Single administration (maximum single dose)
- Daily administration within 24 hours (maximum daily dose)

unless the doctor has clearly indicated it in the prescription.

Doctor may intentionally exceed the maximum dose:
- He writes an exclamation mark after the weight and after it he writes the weight in parentheses in Latin.

Recommended therapeutic and maximum doses of drugs for adults are determined for
- Drugs from tables no. I., II., III. (Narcotic and psychotropic substances, venenum and separandum categories), and some other exceptions.

d.m.s; d.max.s   =   **d**osis **m**axima **s**ingula (maximal single dose)
d.m.d, d.max.p.d   =   **d**osis **m**axima pro **d**ie (maximal daily dose)

If the doctor does not indicate that the maximum doses are to be exceeded, but the maximum doses are exceeded, the pharmacist will contact the doctor. If the doctor is unavailable, we will adjust to the recommended therapeutic doses and inform the doctor additionally.

Example 1

		single	daily	
CLOXACILLINUM NATRICUM	P.O.	0, 5	2, 0	
	i.m., i.v.	0, 25-1, 0	1, 0-6, 0	
COCAINI HYDROCHLORIDUM	ext.	0, 05 v max. 10% roztoku	0, 1	max. k aplikaci na sliznici 1 - 1, 5 mg/kg
		25% pasta		
CODEINUM	P.O., I.M.	0, 03-0, 06	0, 18-0, 36	
CODEINI DIHYDROGENOPHOSPHAS SESQUIHYDRICUS	P.O.	0, 015-0, 03	0, 03-0, 09	d.max.s. 0, 1; d. max.p.d. 0, 3
Strana 673				
COFFEINUM	P.O.	0, 05-0, 25	0, 2-0, 5	d.max.s. 0, 5; d. max.p.d. 1, 5
	P.O.	0, 001		fivodni davka

Perform a dose check for the following prescription:

Rp.

Codeini dihydrogenphosphas sesquihydricus 0.025

Lactosum q.s.

M.f. pulv. Ad Capsulam

D.t.d. XX (viginti)

D.S. one capsule four times a day

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Example 2

		single	daily	
AMFETAMINI SULFAS	P.O.	0, 005-0, 01	0, 005 -0, 02	nutna individualizace davek, max. 0, 02
AMILORIDI HYDROCHLORIDUM	P.O.	0, 005-0, 01	0, 005 - 0, 015	
AMINOPHENAZONUM	P.O., i.v.	0, 3 -0, 45	0, 3-0, 9	
AMINOPHYLLINUM	P.O.	0, 1-0, 3	0, 3-1, 2	neretardovane formy, d.max.s. 0, 5; d.max.p.d. 1, 5
		0, 175-0, 7	0, 35-1, 4	retardovane formy
		0, 25 a 0, 5 infuze pramemou rychlosti 0, 6 mg/kg/h, která navazuje na i.v. bolus 0, 005/kg		

Perform a dose check for the following prescription:

Rp.

Aminophyllini 3.5

Butyri cacao q.s.

M.f. pulv. Supp

Div. In dos. Aeq. X (decem)

D.S. 1 suppository if needed

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Example 3

		single	daily	
CODEINI DIHYDROGENOPHOSPHAS SESQUIHYDRICUS	P.O.	0, 015-0, 03	0, 03-0, 09	d.max.s. 0, 1; d. max.p.d. 0, 3
Strana 673				
COFFEINUM	P.O.	0, 05-0, 25	0, 2-0, 5	d.max.s. 0, 5; d. max.p.d. 1, 5

Perform a dose check for the following prescription:

Rp.

Coffeini 5.0

Syrups aurantii 20.0

Aqua purificata ad 100.0

M.f. sol

D.S. 1 teaspoon 4 times a day

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2. Children

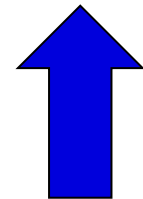# Recommended therapeutic doses of drugs for children

Table no. V. of the 2009 Czech Pharmacopoeia

- child = patient under 15 years of age

- There are no maximum doses for children!!

- **The limit** of prescribed doses are directly **recommended therapeutic doses**

- If the doctor intentionally intends to exceed the recommended dose: puts an exclamation mark after the weight

  and write the amount of the weight in parentheses in words (Latin).

- Single rec. ter. dose (singula)

- Daily rec. ter. dose (pro die) = three times the single recommended therapeutic doses, unless stated otherwise
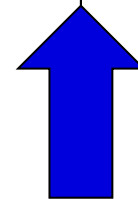
Dependence of the dose of the drug for the child: on age, weight, on the surface of the body

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Tabulka V: Doporučené terapeutické dávky pro děti

Název	Způsob podání	Dávkování (g)*				Poznámka
			Jednotlivá terapeutická dávka podle věku			
		g kg den	rok	let	let	
ACETAZOLAMIDUM	p.o.	0, 008 - 0, 03				
ACETYLCYSTEINUM	p.o.		0, 2/den	0, 4/den	0, 6/den	
ACICLOVIRUM	i.v.	0, 015 - 0, 03 (0, 75 - 1, 5/m²)				ve 3 dílčích dávkách po 8 h
	i.v.	0, 03				u novorozenců, ve 3 dílčích dávkách po 8 h
ACIDUM ACETYLSALICYLICUM	p.o.	0, 1	0, 08 - 0, 15	0, 15 - 0, 25	0, 25 - 0, 5	antirevmatikum
	p.o.	0, 065				antipyretikmn
ACIDUM ALGINICUM		0, 025				
ACIDUM ETACRYNICUM	p.o.	0, 025				starší 21et, podle potřeby lze zvyšovat o 0, 025/den (max. na 0, 1 g)
ACIDUM NALIDIXICUM	p.o.	0, 05 - 0, 055				ve 4 dílčích dávkách
	p.o.	0, 03 - 0, 033				dlouhodobé podávání

Weight

Age intervals

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Calculation of the recommended therapeutic dose of drugs for children by weight

Table no. V. of the 2009 Czech Pharmacopoeia

- Third column

- Unless otherwise stated, dose is given as g/kg body weight/day

- The calculated dose then corresponds **to the daily dose**

- **Single dose = daily dose/3** (unless otherwise specified in the note)

- The dependence of the dose on the child's weight is more or less linear.

- Relatively fast, in practice antibiotics

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Example 4

Weight

	podani	g kg den	rok	let	let
ACETAZOLAMIDUM	p.o.	0, 008 - 0, 03			
ACETYLCYSTEINUM	p.o.		0, 2/den	0, 4/den	0, 6/den

Check the dosages for the following prescription. The child is 4 years old and 19 kg:

Rp.

Acetazolamidi   0.4

Syrups aurantii   20.0

Aquae purificatae   ad 100.0

M.f. sol.

D.S. 1 tablespoon 3 times a day

Example 6

					0, 002 - 0, 004	0, 004 - 0, 01
AMFETAMINI SULFAS	p.o.				0, 002 - 0, 004	0, 004 - 0, 01
	s.c., i.m.				0, 001 - 0, 002	0, 002 - 0, 005
AMINOPHYLLINUM	p.o., i.v.	0, 012			0, 005 - 0, 1	0, 1 - 0, 25
	p.rect.	0, 015			0, 1 - 0, 2	0, 2 - 0, 3

Check the dosages for the following prescription. The child is 7 years old and 28 kg:

Rp.

Aminophyllini   1.5

Massae supp.   q.s.

M.f. supp.
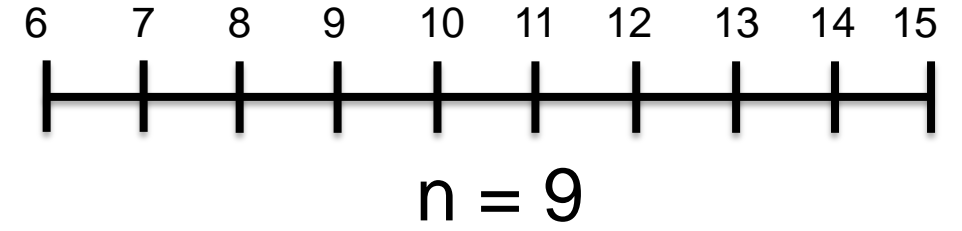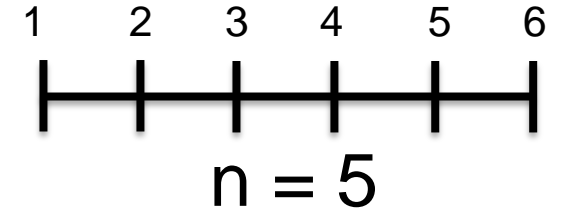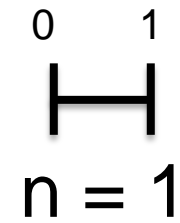
Div. in dos. Aeq. X (decem)

D.S. 1 suppository 3 times a day

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Calculation of the recommended therapeutic dose of drugs for children according to age

Table no. V. of the 2009 Czech Pharmacopoeia

- The dependence of the dose on age **is not linear**
- Therefore, the benefits are divided into three intervals (0-1 year; 1-6 years; 6-15 years) = columns 4 to 6
- **INDIVIDUAL doses are listed in the columns (unless otherwise stated)**
- If a single value is given in the given interval without any further comment, it can be assumed that the value is common for the entire interval
- If a range is specified, the values given are valid only for age interval limit values = for age within the age interval, the dose must be calculated = interpolation method

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Calculation of the recommended therapeutic dose of drugs for children according to age

Interpolation method

$$d_n = d_1 + \frac{d_2 - d_1}{n} \cdot n_d$$

$n = 1$

$n = 5$

$n = 9$

d_n = desired dose for a child of a given age

d_1 = recommended ther. dose for the lower age limit of the interval in which the age of the child for which the dose is determined

d_2 = recommended ther. dose for the upper age limit of the interval in which the age of the child for whom the dose is determined

n = number of partial „year" intervals within the age range

n_d = number of annual intervals from the beginning of the age range to the age of the child

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Example 7

Check the dosages for the following prescription. The child is 9 years old:

Rp.

Cefadroxili 10%

Syrupi simplici 20.0

Aquae purificatae ad 100.0

M.f. sol.

D.S. 1 teaspoon 4 times a day

Age intervals

	p.o.			0, 0025	0, 125	0, 25	3x denně
CEFADROXILUM	p.o.			0, 025/kg/den			v dílčích dávkách
	p.o.				0, 25	0, 5	2x denně
CEFALEXINUM MONOHYDRICUM	p.o.	0, 025 - 0, 10					ve 4 dílčích dávkách

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Example 8

Check the dosages for the following prescription. The child is 3 years old:

Rp.

Chlorali hydrati   4.0

Glycerol   10.0

Aquae purificatae   ad 100.0

M.f. sol.

D.S. Ad manus medici (5 ml rectal infusion)   **Age intervals**

CEFUROXIMUM NATRICUM	i.m.	0, 03 - 0, 1				ve 3 - 4 dílčích dávkách
CHLORALI HYDRAS	p.rect.	0, 025 - 0, 05	0, 1 - 0, 15	0, 18 - 0, 3	0, 4 - 0, 8	
CHLORAMBUCILUM	p.o.	0, 1 - 0, 2 mg	1 - 2 mg/den	2 - 4 mg/den	4 - 7, 5 mg/den	
CHLORAMPHENICOLI NATRII	s.c.	0, 025	0, 02 - 0, 08	0, 1 - 0, 18	0, 16 - 0, 4	

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Example 9

Check the dosages for the following prescription. The child is 5 years old:

Rp.

Spironolactoni   0.2

Lactosi   q.s.

M.f. pulv. Ad Capsulam

Div. in dos. Aeq. XX (viginti)

Age intervals

D.S. one capsule twice a day

SPIRAMYCINUM	p.o.	0, 05				v dílčích dávkách
SPIRONOLACTONUM	p.o.	0, 0015 - 0, 003	0, 004 - 0, 006	0, 006 - 0, 011	0, 011 - 0, 02	
STREPTOKINASUM	i.v.	1300 - 1400 m j/kg/h				

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Calculation of the recommended therapeutic dose of drugs for children according to body surface area

ČL 2009 (intro to tab. no. V.): Formula:

$$g = \frac{S}{1{,}73} \cdot G$$

g = Recommended therapeutic dose of the drug for the child

S = the size of the child's body surface area (m^2)

G = Recommended therapeutic dose of the drug for an adult (tab. no. IV ČL 2009)

- This is especially important in cases where the dose for children is not listed in Table V at all

- The body surface determined by the nomogram

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Calculation of the recommended therapeutic dose of drugs for children according to body surface area
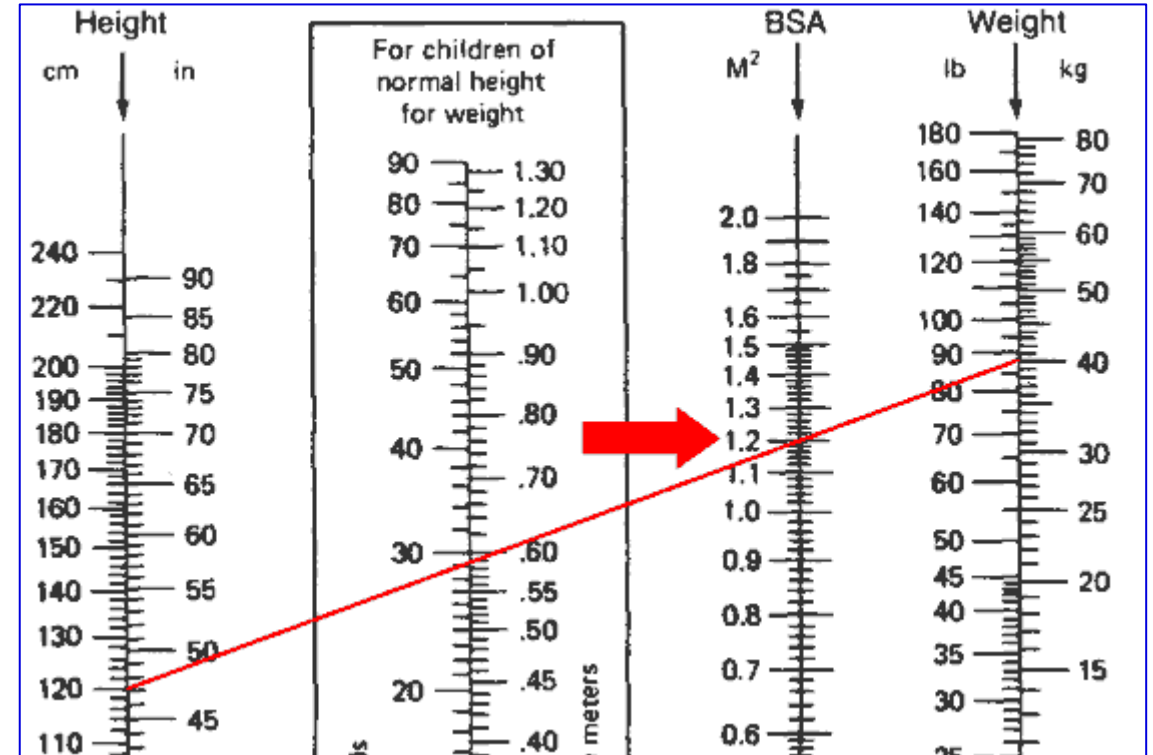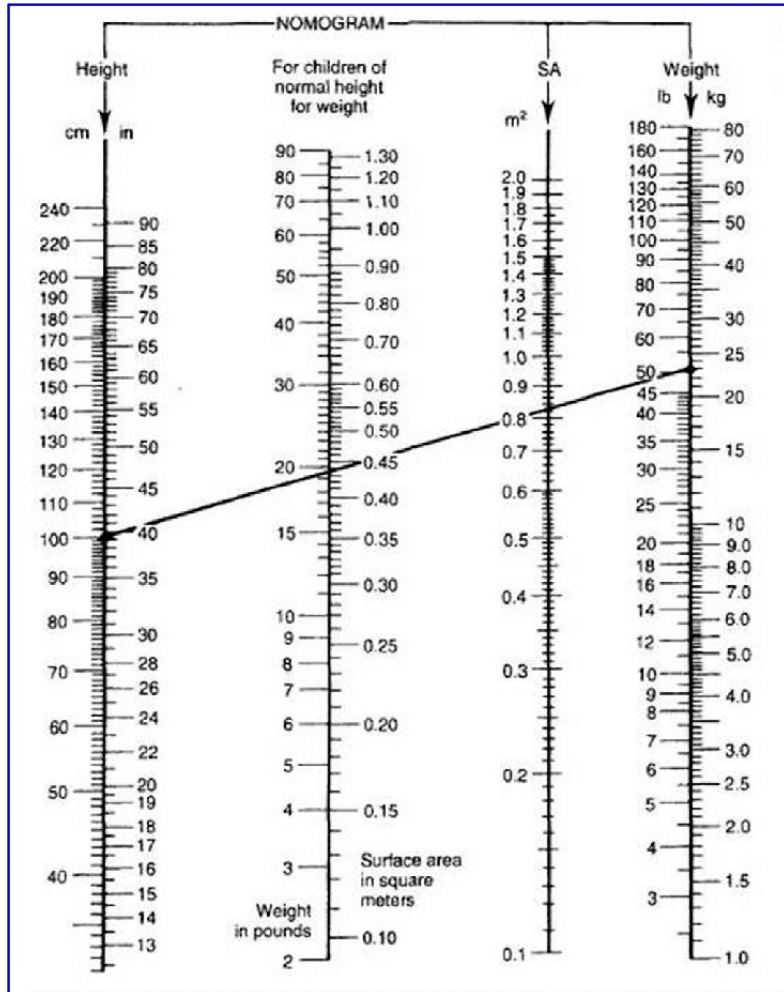
Determination of Body Surface Area:

- Nomogram

- Correlation tables (precalculated values)

- Formula

$$s = \frac{7 \cdot \text{age} + 45}{100}$$

(age in years)

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Recommended therapeutic doses for children

Example 10

Check the dosages for the following prescription. The child is 9 years old:

Rp.

Omeprazoli 0.005

Lactosi q.s.

M.f. pulv. Ad capsulam enterosolventes

D.t.d. XV (quindecim)

D.S. 1 capsule before the main meal

		single	daily	
OMEPRAZOLUM	P.O.	0, 02-0, 04	0, 02 - 0, 08 (ev. a 0, 18)	
ONONIDIS RADIX	P.O.	2, 0	12, 0	
OPIUM CRUDUM	P.O.	0, 050	0, 2	d.max.s. 0, 15, d.max.p.d. 0, 5

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Example 11

Check the dosages for the following recipe. The child is 12 years old:

Rp.

Tenoxicami   0.06

Massae supp.   q.s.

M.f. supp.

Div. in dos. Aeq. X (decem)

D.S. 1 suppository 3 times a day

		single	**daily**	
TEMAZEPAMUM	P.O.	0, 01 -0, 03	0, 01-0, 06	0, 02 - 0, 04 - premedikace
TENOXICAMUM	P.O., p.rect.	0, 01-0, 02	0, 01-0, 02	

Example 12

Check the dosages for the following recipe. The child is 10 years old:

Rp.

Metformini HCl 0.5

Lactosi q.s.

M.f. pulv. Ad Capsulam

D.t.d. L (quinquaginta)

D.S. one capsule twice a day

		single	daily
METFORMINI HYDROCHLORIDUM	P.O.	0, 5-0, 85	1, 0-3, 0