



Work-Related Health among California Veterinarians

A questionnaire study

Päivikki Susitaival, MD, PhD

Steven Berry, DVM, MPVM

John H. Kirk, DVM, MPVM

Marc B. Schenker, MD, MPH

Subjects

- F **2000 veterinarians** (California VMA) were sent a structured questionnaire in June-October 1997 (3 mailings).
- F **1416** respondents (**73%**) yielded **1353 professionally active** veterinarians contributing the data of this study.

Studied 1353 subjects

- u **866 (64%) men, 487 women**
- u 72 men (8%) and 66 women (12%) **part-time** veterinarians
- u **Mean age:**
 - F men 50 (26-85), women 38 (26-77) years
- u **Mean years in practice:**
 - F men 23 (0-59), women 10 (0-44) years

The questions included...

- | General demographics, work history
- | Questions on general health, on-the-job injuries, cumulative trauma, respiratory and skin symptoms, and zoonoses
- | History of atopy, smoking

General Health, %

	♂	♀	ALL
Excellent	49	39	45
Very good	34	41	37
Good	13	17	15
Fair	2.4	3.3	2.6
Poor	0.5	0.4	0.4

Use of regular medication, %

	♂	♀
Any	46	56 *
one	22	29
two	12	15
three	6.3	7.0
4-5	5.4	5.5

Smoking, % (Regular= at least one cigarette a day for most days)

	♂	♀	ALL
u Current	8.8	5.0	7.5
regular	3.8	2.3	3.3
occasional	5.0	2.7	4.2
u Ex	25	15	22
u Never	66	80	71

Chronic (MD Dx) illness, %

	♂	♀	ALL
Any	27	29	28
musculoskeletal	7.1	8.8	7.7
cardiovascular	11	2.1	7.5 ***
respiratory	3.9	9.7	6.0 ***
skin disease	2.3	3.3	2.7
cancer	2.0	2.3	2.1
diabetes	2.4	0.2	1.6 **

Animal proteins

in, e.g., dander, urine, saliva, blood, tissues...

May cause:

- allergic rhinitis and asthma (IgE)
- contact urticaria (IgE)
- protein contact dermatitis (IgE)
- allergic contact dermatitis (of the delayed type)

Atopic Symptoms Among California Veterinarians.

Päivikki Susitaival, MD, PhD, John H. Kirk, DVM,
and Marc B. Schenker, MD, MPH

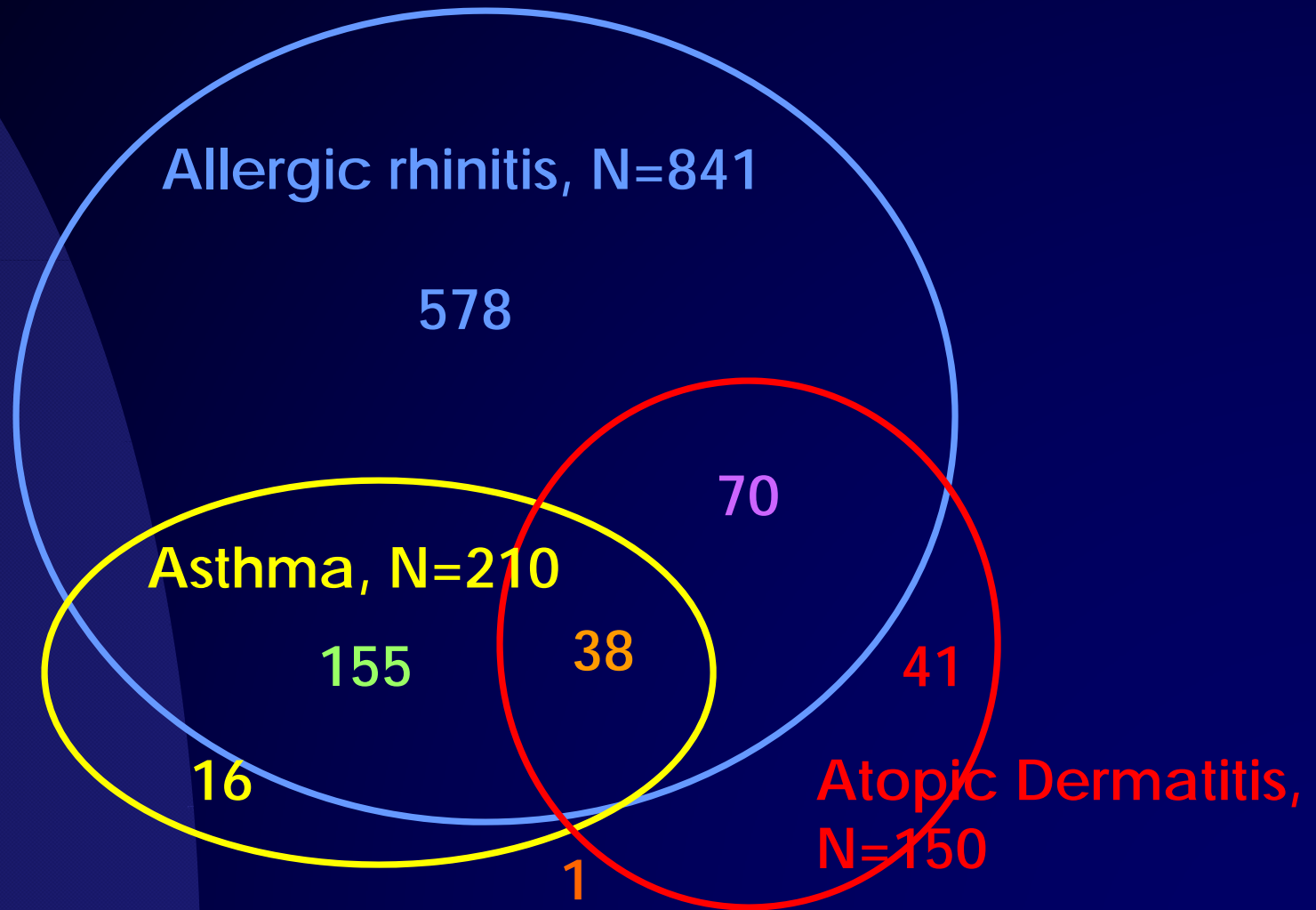
American Journal of Industrial Medicine 44:166–
171 (2003)

History of Atopy, %

	♂	♀	ALL
ALL ATOPY	62	74	66
Asthma	13	19	15
A Rhinitis	58	70	62
Skin atopy	9.6	14	11

- u "...ever had allergic rhinitis /asthma?"
- u "...ever had itchy rash (atopic dermatitis) that has affected skin creases or folds?"

The distribution of reported atopic symptoms in 1353 California veterinarians



Veterinary questionnaire. Susitaival 1997

H5 Have you ever had asthma?

u 1 no → *move on to question H7*

u 2 yes **When?** (*Mark all that apply*)

before school age (less than 6 years) 1

at school age (6-18 years) 2

in adult life (more than 18 years) 3

u **When was it diagnosed?** 19____ year

History of Asthma in 1353 California veterinarians, %

	men	women	ALL
Ever asthma	14	19	16
u childhood	2.9	3.3	3.0
u schoolage	4.9	6.8	5.5
u adult	9.4	16	12
u <u>adult only</u>	6.9	11	8.4

REPORTING ATOPY IN SOME POPULATIONS, %

	DN	LA	CV	F	PM	HO	TD	FT	GP
N	799	156	1353	3237	214	376	125	145	717
year	1998	1999	1997	1992	1997	2000	2000	2000	1992

History of atopic symptoms

Asthma (MD Dx)	7		16	4	6	8	3	4	5
Allergic rhinitis	40	26	62		40	43	30	30	40
Atopic dermatitis	24	33	11	13	20	20	20	21	15

Veterinary questionnaire

H6. What is the cause of your asthma? (Mark all that apply)

1 pollens → specify _____

2 animals

→ **Which animals?**

1 cats

2 dogs

3 other pets → specify _____

4 cattle

5 horses

6 other animals → specify _____

3 allergy to other agents → specify _____

4 other cause → specify _____

5 unknown

Animal allergies reported as Causes of W-R Asthma, % (n=210)

	♂	♀	ALL
Some animal	81	85	83
Cat	54	<u>71</u>	61 *
Dog	32	42	36
Horse	15	<u>34</u>	23 ***
Cattle	7.7	9.7	8.6
Other	13	38	24

Self-Reported Hand Dermatitis in California Veterinarians.

Päivikki Susitaival, MD, PhD, John H. Kirk, DVM,
and Marc B. Schenker, MD, MPH

American Journal of Contact Dermatitis 12
(2):103–8 (2001)

Environmental Risk factors for Hand Dermatitis

- u **Wet work or occlusion** (glove use) more than 2 hours a day
- u Skin contact with chemicals, oils, etc.
- u Contaminated tools, gloves, clothing, etc.
- u **Soaps, cleaners, creams**
- u **Glove-materials**
- u **Animal and plant handling**
- u Friction, dusts, mechanical irritation
- u Dry, cold, hot, humid....

Animal allergy

causing occupational dermatitis

- « Hand eczema with contact allergy to cow dander, both immediate and delayed, was first described in 1948 in Wisconsin

S Epstein, J Allergy 1948;19:333

Contact allergy with dermatitis
(immediate or delayed) has been reported in the literature
from...

è **Laboratory animals** Numerous reports

è **Cow** Epstein 1948, Schneider et al. 1960, Van
Ketel & van Diggelen 1982, Lings 1994, Susitaival
et al. 1995, Timmer & Coenraads 1996

è **Pig** Malanin & Kalimo 1992

è **Horse** Schneider et al. 1960

è Sirieix-Sorhuet et al. 1991, Quirce et al.

1992

Risks factors for laboratory animal allergy according to studies

- u History of atopy
- u Positive skin prick tests
- u Total-IgE > 100
- u Allergy to domestic animals
- u Quantity of exposure to animals
- u
- u Sex (woman)??



Animal-related occupational skin diseases in Finland in 2000-2007 (Finnish Register of Occupational Diseases, N=7310)

Animal	n	Diagnoses	Industry or occupations
Scabies mite	412	Scabies	health and child care
Cow	383	PCD (367), ACD (9)	dairy farming, veterinarians
Lab animals	14	PCD	research, laboratory assistants
Storage mites	10	PCD	farming, warehouses for food etc.
Swine	7	PCD	farming, abattoirs, animal transportation
Poultry	3	Not indicated	farming, food industry
Spiders	2	PCD	cattle farming
Fox	1	PCD	fur industry
Dog	1	PCD	education
All animal related	833		

PCD = protein contact dermatitis, ACD= allergic contact dermatitis



è 45% of Danish veterinarians (1968) reported work-related dermatoses

Hjorth & Roed-Petersen; Contact Dermatitis 1980

è Finnish Register of Occupational Diseases: Contact urticaria common in veterinarians

Dermatitis (veterinary study, Susitaival 1997)

Susitaival et al. Am J Contact Derm 2001; 12(2): 103-8

1416 California veterinarians in 1997

D1. During your veterinary career, have you had any dermatoses (e.g. rash, eczema, or hives)? missing 0

no	779	
yes	637	45.0

D2a. Have you had dermatoses... 619 missing 18

only once and for less than two weeks	160	25.8
only once but <u>for two weeks or more</u>	66	10.6
more than once or persistently	393	63.3

Dermatitis areas (veterinary study, Susitaival 1997)

On which parts of your body have you had this dermatosis? 635

missing 2

backs of hands, fingers of elbows	261	41
palms	64	10
forearms	348	55
wrists	152	24
face other than eyelids	77	12
around the eyes, eyelids	52	8
around the neck	67	11
fronts of elbows	44	7
upper arms	78	12
trunk, shoulders, thighs	105	16
behind the knees	40	6
legs	81	13
fronts of ankles	27	4
somewhere else	74	12

(entire body, groins, head/scalp, feet, chest, back/front of legs, (sides of fingers, lower eyelids, stomach, lips, buttocks, waistline – etc.))

Sx of dermatitis (veterinary study, Susitaival 1997)

What are/were the symptoms of the dermatoses?

636 missing 1

hives or urticaria	169	26.6
redness	385	60.5
dry skin with scaling	194	30.5
itching	479	75.3
rough skin, rash	198	31.1

tiny water blisters (vesicles) or oozing	141	22.2
fissures/ cracks/ crusting	114	17.9
pain, tenderness	98	15.4
burning/ prickling/ stinging	91	14.3
swelling (edema)	74	11.6
other	48	7.5

abscesses/pustules 12
papular, papules 8
ringworm 4
poison oak 3
folliculitis 2
blisters 2
hyperkeratosis 1
psoriasis 1

Definition:

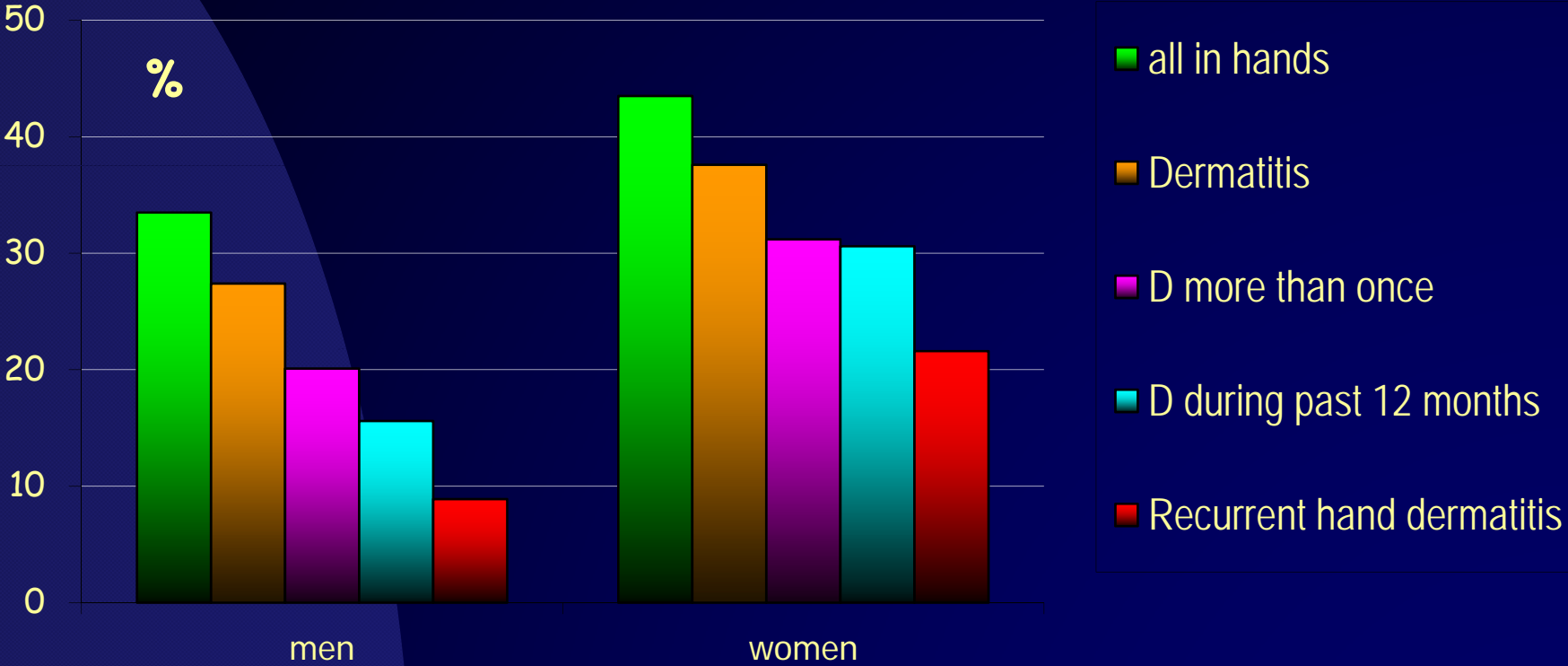
'DERMATITIS' (=Possible Contact Dermatitis)

- F At least two of the following symptoms:
 - è red, dry, itch, vesicles, fissures
- F or hives alone

'Recurrent Hand Dermatitis'

- F 'Dermatitis' in hands
- F More than once
- F During the past 12 months

Reported hand/forearm skin symptoms in 1353 California veterinarians



Reported aggravators of skin symptoms, % 189 California veterinarians with recurrent hand dermatitis

Handling specific animals	55
Surgical/obstetric procedures	24
Protective gloves	17
Medications	4
Other chemicals	21

Susitaival, Kirk & Schenker; Am J Contact Dermatitis 2011



Data in the veterinary study. Susitaival 1997

Have you noticed if contact with certain work-related factors (e.g. animals, animal fluids, medicaments or other chemicals, protective gloves or veterinarian procedures) aggravate(d) or cause(d) your dermatoses? 632 missing 5

no	245	
yes	387	61

Which are these aggravating or causative factors? 387 missing 0

obstetric work	62	16
cattle	52	
horses	10	
other	7	(any, ovine, small ruminants, dogs+cats)
surgery	29	7
cattle	5	
horses	6	
cats	14	
dogs	12	
other	12	(desinfectants 8, gloves 6 – two animals)

Data in the veterinary study. Susitaival 1997

Causes... cont....

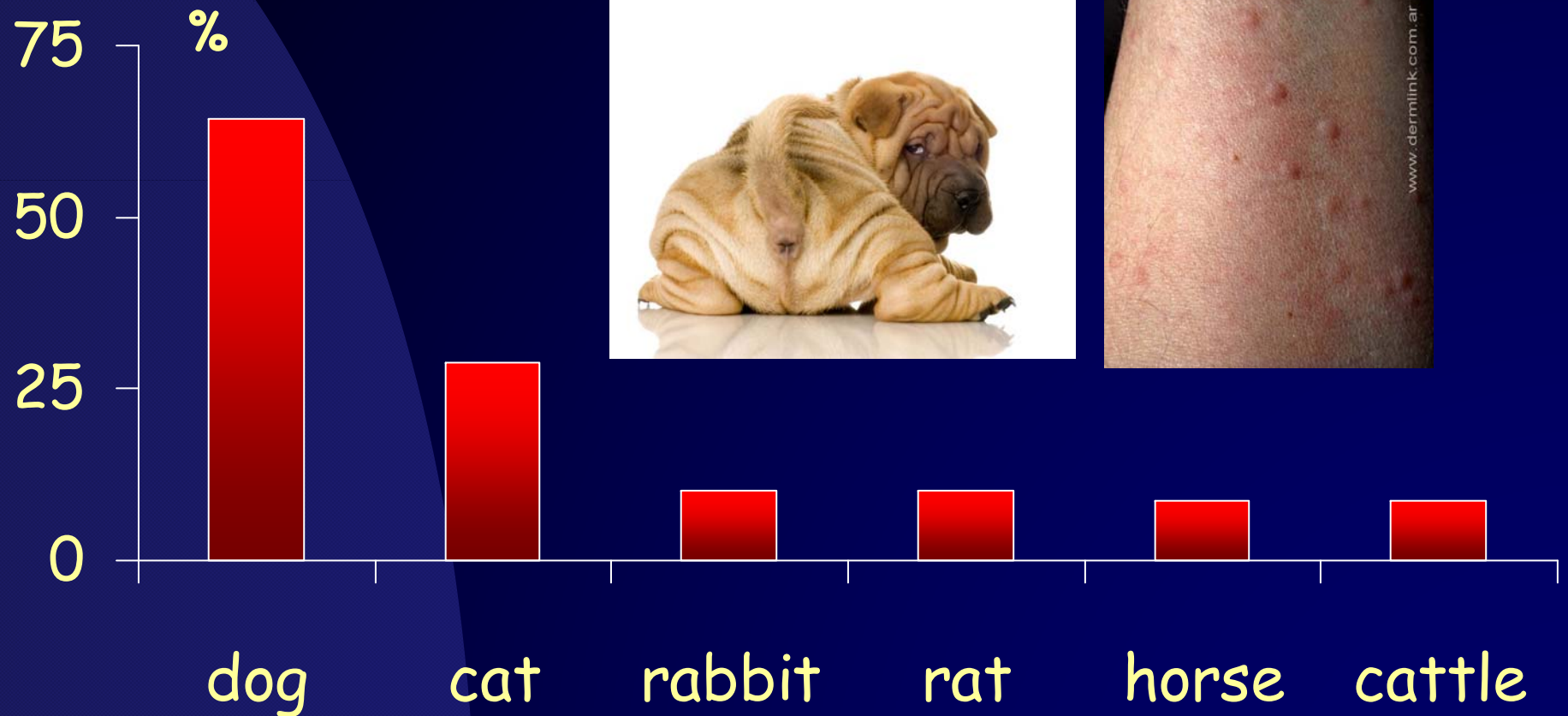
contact with animal fluids	63	16.3
cattle	30	
horses	11	
cats	15	
dogs	17	
other	10	(big cats, lab animals, small ruminants, ferrets, birds, etc.)
<i>specify fluid</i>		
saliva	23	
amniotic fluid	21	
blood	6	
urine	7	
other	17	(feces 6, seborrheic dander 2, semen, etc.)

Data in the veterinary study. Susitaival 1997

Causes... cont....

handling specific animals	215	55	
cattle	16		
horses	20		
cats	66		
dogs	131		(5 mentions of sharpei dogs only)
other	60		(all imaginable)
medications used for animals	34	9	(17 meds, rest disinfectants etc.)
other chemicals	95	24	(most disinf, scrubs)
using protective gloves	60	16	(latex/surgical, powder/gloves)
skin infection	64	17	
• ringworm	50		
• other	17		(scabies 11, pyoderma/folliculitis 3, <u>poison oak</u>)
other work related factor(s)	63	16	
			(washing, soaps, poison oak 10, unknown, <u>some medications</u> , <u>animal hair/dander</u>)

Exacerbation after animal handling (N=194) - reported animals



Data in the veterinary study . Susitaival 1997

D6a. Approximately how soon after the contact with the aggravator or the causative factor do/did the skin symptoms appear or get worse? (*Give your best estimate, if several aggravators, fill a line for each*) 364 missing 23

179 minutes, 78 hours, or 118 days after the contact with

46 minutes, 31 hours, or 36 days after the contact with

15 minutes, 17 hours, or 6 days after the contact with

2 minutes, 2 hours, or 3 days after the contact with

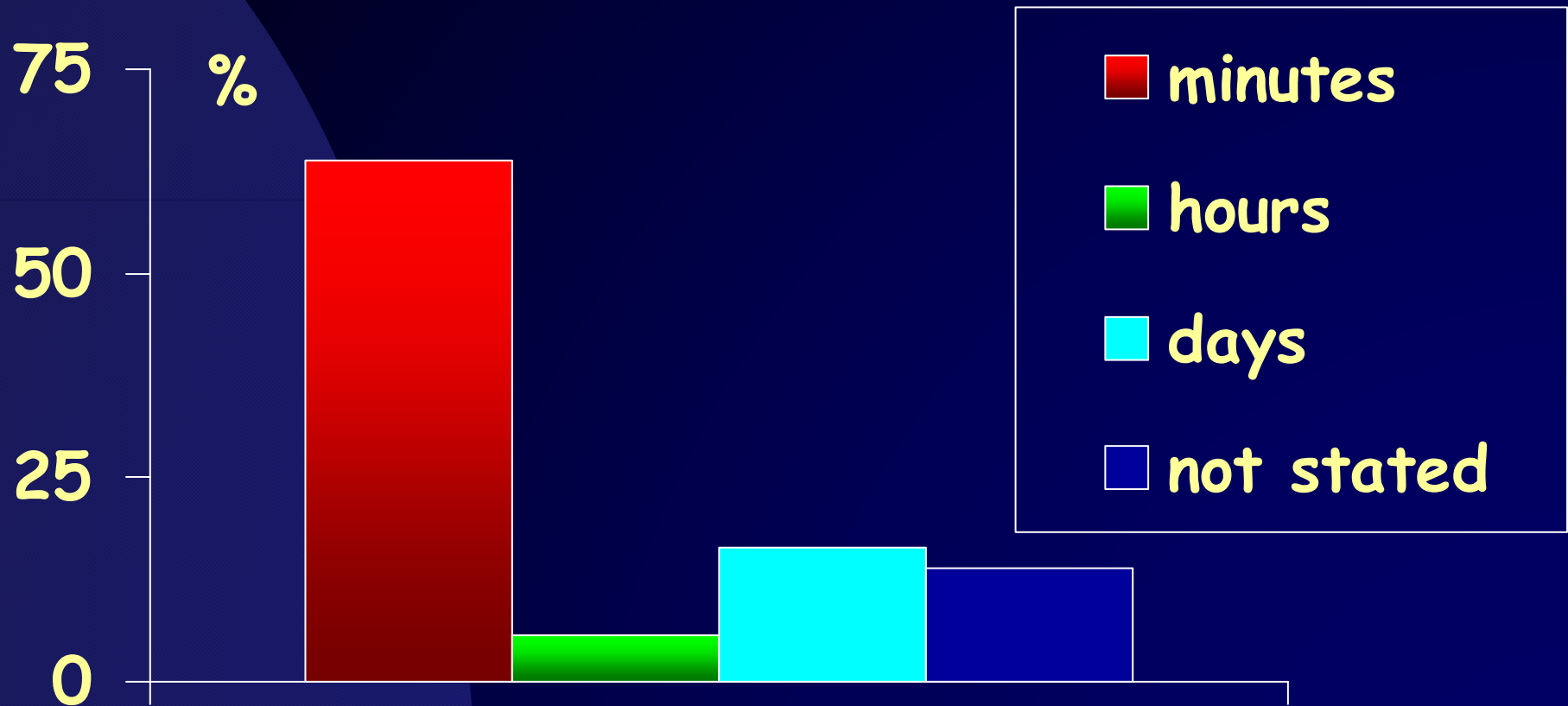
2 minutes, - hours, or 1 days after the contact with

244

128

164

Exacerbation after animal handling (N=194) - time from contact to symptoms



Animal contact reported as cause of respiratory
and skin symptoms, %

	Respiratory	Skin
<u>Any animal</u>	78	48
Cat	92	20
Horse	80	32
Cattle	40	79
Rabbit	87	63
Dog	66	53

Host risk factors for relapsing hand dermatitis in California veterinarians

(multivariate logistic regression model, Susitaival et al. 2001)

	OR	95% C.I.
Sex: woman	1.9	1.3-2.8
History of atopy:		
respiratory atopy	2.0	1.3-3.1
atopic dermatitis	3.5	2.1-6.0
Hand dermatitis as child	3.4	2.2-5.2

Risks for Hand Eczema - Host factors

- **Present or previous (extensive) Atopic Eczema** (numerous studies)
- **Hand eczema before age 20** (numerous studies)
- **Dry, sensitive skin** (Susitaival et al. 2006)
- **Rash from metals/nickel allergy** (many studies)
- **Female sex** (hormonal?) (Meding 2000, Susitaival et al 2000, Farage et al. 2010)
- **Respiratory atopy** (certain jobs) (Meding et al. 1989, Susitaival 1996, Susitaival et al 2000)
- **Stress – weakens epidermal barrier** (Denda et al. 1998)

Zoonoses

- Were reported by 530 (39%) of respondents
- 2.2% had chronic problems from zoonoses, mostly from brucellosis
- In addition, 87 reported infections/abscesses after bites including 5 generalized infections / septicaemias

Zoonotic skin infections reported in/by veterinarians

Bacterial

<i>Cat scratch fever</i>	4.1%
<i>Brucellosis</i>	3.3%
<i>Lyme disease (Borreliosis)</i>	
<i>Psittacosis</i>	1.2%
<i>Salmonella-infections</i>	1.2%
<i>Anthrax</i>	
<i>Erysipeloid</i>	
<i>Tularemia</i>	
<i>Cutaneous listeriosis</i>	
<i>Pasteurella/Actinobacillus</i>	
<i>Mycobacterial infections</i>	



Fungal

<i>Ringworm</i>	23%
<i>Cryptosporidiosis</i>	1.8%
<i>Coccidioidomycosis</i>	
<i>Blastomycosis</i>	

Viral

<i>Orf or pseudocowpox</i>	
<i>Epizootic vesicular stomatitis</i>	
<i>Bovine papular stomatitis</i>	

Mites

<i>Scabies</i>	1.2%
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Conclusions

- è Reporting of atopic symptoms common
- è High prevalence of reported hand dermatoses, asthma, cumulative trauma disorders, and medication use
- è Dermatoses and respiratory symptoms often related to animals
- è In spite of high frequency of symptoms, general health was considered good

Thank you for your attention!



Päivikki Susitaival, Head, Dept Dermatology, North Carelia Central Hospital, Joensuu, Finland