

**The Utility of The Toronto System of Dental
Diagnostic Codes (TSDDC) to Determine
Prevalence of Conditions and to Document
Changes in Diagnoses**



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Need for Diagnostic Codes

- ◆ Entering, extracting, and processing disease information in databases of EDRs
- ◆ Standardization of EDR
- ◆ Health services research related to quality assurance

TSSDC

- ✦ Developed for pediatric dental program at former city of NY's PHD, 1997
- ✦ Four digit ,numeric system
- ✦ 124 terms

Purpose

The purpose of my study was to examine the electronic records of Toronto Public Health dental services over six years of use (1997 to 2002) in order to evaluate the utility of the TSDDC to document morbidity, comorbidity, and changes in diagnoses

Study Population

- ✦ North Region of Toronto
- ✦ School children identified with unmet needs for dental care by the annual screening program

Methods

Data Management : Syntax (SPSS 12.0)

- ◆ 11 major diagnostic groups
- ◆ 7 caries categories
- ◆ 9 related services
- ◆ Aggregated to 1 record/patient

Methods contd.

- ✦ Frequencies of all 11 conditions, 7 caries categories were generated
- ✦ Comorbidities were documented
- ✦ Numbers of patients with changed diagnoses were calculated

Results

Data management

- ✦ 1.5 million records of services →
25 860 patient records
- ✦ 5 school years

Prevalence

Diagnostic Condition (Descending order of prevalence)	Year 1 (1997-98)	Year 2 (1998-99)	Year 3 (1999-00)	Year 4 (2000-01)	Year 5 (2001-02)
Total caries	77.7	80.9	81.7	79.5	80.5
Smooth surface dentinal caries	57.8	62.9	60.0	62.9	64.5
Pit fissure dentinal caries	35.6	38.1	42.1	41.7	37.4
Smooth surface enamel caries	6.0	7.8	6.6	1.4	0.8
Pit fissure enamel caries	1.9	0.5	0.4	0.8	0.3
Early white lesion on smooth surface	0.9	0.9	0.5	0.7	0.7
Early white lesion on pit and fissure	0.7	0.7	0.3	0.4	0.3
Arrested caries	2.0	1.3	1.2	0.6	0.6
Deposits	30.3	33.5	35.7	39.7	36.8
Developmental disturbances	23.1	19.4	14.5	15.2	17.0
Gingivitis and/or periodontitis	11.0	10.4	11.9	10.9	12.0
Defects in existing restorations	9.8	9.0	10.3	9.1	8.9
Bite malocclusion	4.6	4.6	5.4	6.4	6.1
Other malocclusion	4.0	4.1	5.1	6.4	5.0
Pulpal disorders	2.6	1.6	1.8	2.0	2.1
Fluorosis	1.6	1.2	1.4	2.3	1.9
Other conditions not mentioned elsewhere	0.8	0.1	0.3	0.3	0.3
Luxation due to trauma	2.0	0.2	0.2	0.1	0.1
Total number of patients with at least one diagnostic code (N) = 100%	6048	6325	7148	7543	7757

Comorbidities cont'd.

All years				2001-02		
Comorbidity	Frequency	Percent	Rank	Comorbidity	Frequency	Percent
1000000000	8931	34.5	1	1000000000	3013	38.8
0000500000	2813	10.9	2	0000500000	786	10.1
1000500000	2281	8.8	3	1000500000	660	8.5
1010000000	1957	7.6	4	1010000000	482	6.2
1100000000	1205	4.7	5	1000501000	389	5.0
1000501000	1078	4.2	6	1100000000	268	3.5
1010500000	759	2.9	7	0010000000	255	3.3
0010000000	628	2.4	8	1010500000	201	2.6
1000001000	411	1.6	9	0000501000	142	1.8
1000000010	409	1.6	10	1000000010	122	1.6
0000501000	348	1.3	11	1000001000	115	1.5
1010501000	296	1.1	12	1000000001	99	1.3
1000000001	294	1.1	13	0010500000	81	1.0
0010500000	262	1.0	14	1010501000	78	1.0
1100500000	243	0.9	15	1000500010	64	0.8
1100501000	205	0.8	16	0100000000	61	0.8
1110000000	184	0.7	17	1100500000	58	0.7
1000010000	170	0.7	18	1000500001	53	0.7
0100000000	166	0.6	19	1000000011	52	0.7
1000500001	147	0.6	20	1100501000	46	0.6
1000500010	138	0.5	21	1000010000	38	0.5
1000000011	113	0.4	22	1001000000	36	0.5
1001000000	111	0.4	23	1110000000	34	0.4
1010000010	109	0.4	24	1010000010	24	0.3
1110500000	95	0.4	25	1100001000	22	0.3
	23353	90.3			7179	92.5

1st digit = caries

5th digit = deposits



Comorbidities cont'd.

1. 21/25 conditions = comorbidities (42-46%)
2. Maximum 4 conditions
3. Dominance of dental caries followed by deposits
 - ◆ 2/21 ≠ caries
 - ◆ 9/21 ≠ deposits

Objective Two (p.79)

Year 1 (1997-98)	Cases with diagnoses	6048
	Cases with subsequent diagnoses	2464
	Cases with changed subsequent diagnoses	1736 (70%)
Year 2 (1998-99)	Cases with diagnoses	6325
	Cases with subsequent diagnoses	1645
	Cases with changed subsequent diagnoses	1087 (66%)
Year 3 (1999-2000)	Cases with diagnoses	7148
	Cases with subsequent diagnoses	1602
	Cases with changed subsequent diagnoses	1063 (66%)
Year 4 (2000-01)	Cases with diagnoses	7543
	Cases with subsequent diagnoses	1264
	Cases with changed subsequent diagnoses	888 (70%)
Year 5 (2001-02)	Cases with diagnoses	7663
	Cases with subsequent diagnoses	38
	Cases with changed subsequent diagnoses	19 (50%)

Smooth surface dentinal Caries

Diagnoses of smooth surface dental caries	Better	Health maintained	Disease maintained	Worse	Number of patients seen in year 2	Total patients who received indicated procedure year 1
N	88	60	929	14	1091	
Procedures received in year 1(1997-98)						
Topical fluoride application	77	44	751	13	885	2674
Restorations	70	18	641	4	733	2851
Topical fluoride application but no restorations	12	6	131	3	152	258

Conclusion

- ◆ TSDDC useful to report burden of illness
- ◆ Facilitate illustration of dental comorbidities
- ◆ Software needed for processing diagnostic information in TSDDC and generating reports

Limitations

- ✦ Secondary data analysis, confounding factors: inter/intra operator variability
- ✦ Not all conditions included
 - a) only higher prevalence
 - b) early stages of disease not considered

Recommendations

- ✦ Review vocabulary
- ✦ Application at other locations (Faculty, Insurance Claims)
- ✦ Economic evaluation for further development

Implications for PH

Continued use

- ◆ Prevalence and incidence data
- ◆ Collect information on comorbidities among dental conditions
- ◆ Quality assurance

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