



Dental Practice-Based Research Network
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**DPBRN 8: Longitudinal Study of Dental Restorations Placed in
Previously Un-restored Surfaces**

Date Prepared: February 24, 2012

Participants: Baseline

	AL/MS		FL/GA		MN		PDA		SK		TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%
Practitioners	63	27.5	37	16.2	31	13.5	51	22.3	47	20.5	229	100.0
Patients	1,507	25.9	1,020	17.5	1,084	18.6	1,233	21.2	972	16.7	5,816	100.0
Restorations	2,800	28.4	1,711	17.3	1,730	17.5	2,303	23.3	1,326	13.4	9,870	100.0

Participants: Follow-up YEAR 01

Practitioners	62		32		31		51		46		222	
Patients	986	65.4	457	44.8	538	49.6	762	61.8	737	75.8	3,480	59.8
Restorations	1,747	62.4	741	43.3	780	45.1	1,352	58.7	981	74.0	5,601	56.7

Participants: Follow-up YEAR 02

Practitioners	57		36		31		51		45		220	
Patients	692	45.9	521	51.1	472	43.5	619	50.2	619	63.7	2,923	50.3
Restorations	1,251	44.7	835	48.8	696	40.2	1,074	46.6	810	61.1	4,666	47.3

Participants: Follow-up YEAR 03

Practitioners	24		35		24		0		34		117	
Patients	197	13.1	439	43.0	104	9.6	0	0.0	226	23.3	966	16.6
Restorations	345	12.3	691	40.4	148	8.6	0	0.0	294	22.2	1,478	15.0

This report is of a follow-up study of 9,870 restorations placed on previously un-restored surfaces among 5,816 patients treated by 229 dentists.

Included in this report are data on 5,601 restorations, among 3,480 patients treated by 222 dentists in year 1 follow-up period, between January 18, 2007 and November 12, 2010, and on 4,666 restorations, among 2,923 patients treated by 220 dentists in year 2 follow-up period between April 25, 2007 and July 14, 2011.

Longitudinal Follow-Up of Restorations – Clinical Data Collection Form – Years 1, 2

1. Is the dentist who is filling out this form today the same one who placed this restoration on the original treatment date (xx/xx/20xx)?

- a Yes
b No

Table Q1: Same dentist who placed the original restoration by DPBRN region

	AL/MS		FL/GA		MN		PDA		SK		TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%
Is the dentist who is filling out this form today the same one who placed this restoration on the original treatment date (xx/xx/20xx)? Year 1												
Yes	1710	98.0	705	95.4	486	62.3	984	72.8	831	84.7	4716	84.3
No	35	2.0	34	4.6	294	37.7	368	27.2	150	15.3	881	15.7
Is the dentist who is filling out this form today the same one who placed this restoration on the original treatment date (xx/xx/20xx)? Year 2												
Yes	1196	95.8	797	95.5	445	64.0	711	66.3	591	73.0	3740	80.2
No	53	4.2	38	4.6	250	36.0	362	33.7	219	27.0	922	19.8

- 84% of restorations at the one-year follow-up visit, and 80% at the two-year follow-up visit, were treated by the same dentist who originally placed the restoration; higher (over 95%) for AL/MS and FL/GA regions than the other regions.

2. Restoration Status: Since the last time you evaluated this restoration, this tooth has been:

- a extracted
b treated with a root canal that altered this restoration
c treated for a problem with this restoration
d None of the above

Table Q2: Status of tooth since last evaluation by DPBRN region

	AL/MS		FL/GA		MN		PDA		SK		TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%
Restoration Status: Since the last time you evaluated this restorations, this tooth has been: (Year 1)												
Extracted	5	0.3	4	0.5	3	0.4	0	0.0	3	0.3	15	0.3
Tx, root canal	5	0.3	5	0.7	13	1.8	0	0.0	10	1.0	33	0.6
Tx, problem w/ restoration	11	0.6	9	1.2	23	3.2	0	0.0	9	0.9	52	0.9
None of the above	1715	98.8	718	97.6	689	94.6	1352	100.0	951	97.7	5425	98.2
Restoration Status: Since the last time you evaluated this restorations, this tooth has been: (Year 2)												
Extracted	1	0.1	6	0.7	5	0.8	3	0.3	5	0.6	20	0.4
Tx, root canal	5	0.4	0	0.0	3	0.5	0	0.0	2	0.3	10	0.2
Tx, problem w/ restoration	10	0.8	5	0.6	14	2.2	0	0.0	3	0.4	32	0.7
None of the above	1224	98.7	823	98.7	606	96.5	1005	99.7	797	98.8	4455	98.6

- Only about 2% of restorations had been extracted, had root canal or any treatment due to a problem with the restoration at year one and at year two.

3. Is this visit due to a problem with this restoration?

a Yes

b No

Table Q3: Visit due to a problem with restoration by DPBRN region

	AL/MS		FL/GA		MN		PDA		SK		TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%
Is this visit due to a problem with this restoration? (Year 1)												
Yes	48	2.8	13	1.8	7	1.0	42	3.1	35	3.6	145	2.6
No	1688	97.2	714	98.2	701	99.0	1310	96.9	927	96.4	5340	97.4
Is this visit due to a problem with this restoration? (Year 2)												
Yes	26	2.1	15	1.8	17	2.7	32	3.0	12	1.5	102	2.2
No	1207	97.9	808	98.2	604	97.3	1040	97.0	792	98.5	4451	97.8

- At both year one and two, the follow-up visit was due to a problem with the restoration for 2% – 3% of restorations overall.

4. Restoration Rating: Rate the condition of this restoration (“acceptable” or “repair or replace”)

a Acceptable – No further clinical action is needed, please indicate if you adjusted the restoration.

Did you adjust or polish to improve the restoration today?

1 Yes

2 No

b Repair or Replace – Clinical action is needed.

Table Q4: Condition of this restoration by DPBRN region

	AL/MS		FL/GA		MN		PDA		SK		TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%
Restoration rating: Rate the condition of this restoration ("acceptable" or "repair or replace") (Year 1)												
Acceptable												
Yes	1676	96.9	706	97.3	670	97.1	1295	95.8	915	95.1	5262	96.4
Among acceptable, indicate if you adjusted or polished the restoration.												
Yes	16	1.0	24	3.5	6	1.7	7	0.5	37	4.1	90	1.8
No	1651	99.0	654	96.5	338	98.3	1288	99.5	876	96.0	4807	98.2
Repair or Replace	54	3.1	20	2.8	20	2.9	57	4.2	47	4.9	198	3.6
Restoration rating: Rate the condition of this restoration ("acceptable" or "repair or replace") (Year 2)												
Acceptable												
Yes	1204	97.3	792	96.0	592	96.3	1021	95.2	772	96.3	4381	96.3
Among acceptable, indicate if you adjusted or polished the restoration.												
Yes	3	0.3	6	0.8	5	1.1	15	1.5	26	3.4	55	1.3
No	1189	99.8	774	99.2	433	98.9	1006	98.5	745	96.6	4147	98.7
Repair or Replace	33	2.7	33	4.0	23	3.7	51	4.8	30	3.7	170	3.7

- The restoration was acceptable for 96% of patients overall at both year-one and year-two follow-ups.
- Among acceptable restorations between 1% – 2% were adjusted or polished in each follow-up year.

The restoration was considered “failed” at the visit if either of the following statements were true:

If in question #2, a, b, or c, tooth was extracted, had root canal therapy or other treatment

If in question #4, restoration is not acceptable

Table Q2 and Q4: by DPBRN region

	AL/MS		FL/GA		MN		PDA		SK		TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%
Restoration failed at Year 1												
Yes	64	3.7	36	4.9	55	7.1	57	4.2	67	6.8	279	5.0
No	1683	96.3	705	95.1	725	93.0	1295	95.8	914	93.2	5322	95.0
Restoration failed at Year 2												
Yes	43	3.4	44	5.3	42	6.0	52	4.8	40	4.9	221	4.7
No	1208	96.6	791	94.7	654	94.0	1022	95.2	770	95.1	4445	95.3

- Restorations failed for about 5% of patients overall at both year one and year two, with MN having the highest rate and AL/MS having the lowest rate for both years.

5. What is your treatment plan for this restoration?

(Mark all that apply)

- a Repair a defective part of the restoration
- b Replace the entire restoration
- c Tooth requires endodontics
- d Tooth will be extracted
- e Other treatment (explain) _____

Table Q5: Treatment plan for this restoration by DPBRN region

	AL/MS		FL/GA		MN		PDA		SK		TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%
What is your treatment plan for this restoration? (Mark all that apply) (Year 1)												
Denominators	N = 54		N = 20		N = 20		N = 57		N = 47		N = 198	
Repair defective part	14	25.9	5	25.0	5	25.0	0	0.0	3	6.4	27	13.6
Replace restoration	18	33.3	8	40.0	12	60.0	31	54.4	29	61.7	98	49.5
Endodontics	8	14.8	1	5.0	1	5.0	11	19.3	0	0.0	21	10.6
Extraction	5	9.3	0	0.0	0	0.0	3	5.3	1	2.1	9	4.6
Other treatment	8	14.8	4	20.0	3	15.0	11	19.3	15	31.9	41	20.7
What is your treatment plan for this restoration? (Mark all that apply) (Year 2)												
Denominators	N = 33		N = 33		N = 23		N = 51		N = 30		N = 170	
Repair defective part	4	12.1	9	27.3	0	0.0	8	15.7	2	6.7	23	13.5
Replace restoration	18	54.6	13	39.4	18	78.3	27	52.9	20	66.7	96	56.5
Endodontics	0	0.0	1	3.0	0	0.0	7	13.7	3	10.0	11	6.5
Extraction	3	9.1	3	9.1	2	8.7	5	9.8	3	10.0	16	9.4
Other treatment	5	15.2	8	24.2	2	8.7	2	3.9	2	6.7	19	11.2

- At both follow-up, the most common treatment plan for the restoration was to replace it at about 50% overall in year one and 56% in year two.

6. Please indicate the **main** reason for repair or replacement of the restoration
(Choose only one).

- a Secondary/recurrent caries
- b Entire restoration is discolored
- c Restoration margins are discolored
- d Restoration margins are degraded or ditched
- e Bulk fracture of restoration
- f Restoration is missing
- g Tooth is fractured
- h Pain or sensitivity
- i Patient request (specify) _____
- j Other reason (specify) _____

Table Q6: Main reason for repair or replacement of this restoration by DPBRN region

	AL/MS		FL/GA		MN		KP		SK		TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%
Please indicate the main reason for repair or replacement of the restoration (Choose only one) (Year 1)												
Denominators	N = 54		N = 20		N = 20		N = 57		N = 47		N = 198	
Sec. caries	4	8.5	3	16.7	5	25.0	3	6.3	5	11.1	20	11.2
Rest. margins discolored	2	4.3	0	0.0	0	0.0	0	0.0	1	2.2	3	1.7
Rest. margins degraded	3	6.4	0	0.0	5	25.0	2	4.2	2	4.4	12	6.7
Bulk fracture of rest.	5	10.6	3	16.7	1	5.0	2	4.2	2	4.4	13	7.3
Rest. missing	10	21.3	5	27.8	2	10.0	8	16.7	6	13.3	31	17.4
Tooth fractured	9	19.2	0	0.0	2	10.0	14	29.2	3	6.7	28	15.7
Pain/sensitivity	9	19.2	2	11.1	1	5.0	8	16.7	1	2.2	21	11.8
Patient request	2	4.3	1	5.6	0	0.0	0	0.0	2	4.4	5	2.8
Other reason	3	6.4	4	22.2	4	20.0	11	22.9	23	51.1	45	25.3
Please indicate the main reason for repair or replacement of the restoration (Choose only one) (Year 2)												
Denominators	N = 54		N = 20		N = 20		N = 57		N = 47		N = 198	
Sec. caries	18	58.1	8	25.8	9	45.0	7	14.0	8	26.7	50	30.9
Rest. margins degraded	1	3.2	4	12.9	2	10.0	2	4.0	1	3.3	10	6.2
Bulk fracture of rest.	2	6.5	3	9.7	0	0.0	4	8.0	1	3.3	10	6.2
Rest. missing	4	12.9	2	6.5	3	15.0	7	14.0	9	30.0	25	15.4
Tooth fractured	4	12.9	5	16.1	4	20.0	13	26.0	3	10.0	29	17.9
Pain/sensitivity	1	3.2	0	0.0	0	0.0	7	14.0	2	6.7	10	6.2
Patient request	0	0.0	1	3.2	0	0.0	0	0.0	1	3.3	2	1.2
Other reason	1	3.2	8	25.8	2	10.0	10	20.0	5	16.7	26	16.1

- For year one, the category with the most responses for the main reason to do repair or replacement was “other reason” at 25% overall.
 - Of specific reasons chosen, the most common was the “restoration is missing” at 17% with FL/GA being slightly higher at about 28% and MN being the lowest at 10%.
- The main reason for repair or replacing the restoration in year two was “secondary or recurrent caries” at approximately 31% overall, with AL/MS being considerably higher at 58%.

7. What technique or observation led you to the diagnosis of secondary caries?
(Mark all that apply)

- a Probing with a dental explorer
- b Radiographs
- c Intuition or clinical experience based on clinical appearance
- d Discolored margin of the restoration
- e Frank or definite caries cavitation
- f Presence of soft, discolored dentin or enamel
- g An exploratory preparation to inspect the lesion

Table Q7: Technique/observation that led to diagnosis of secondary caries by DPBRN region

	AL/MS		FL/GA		MN		PDA		SK		TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%
What technique or observation led you to the diagnosis of secondary caries? (Mark all that apply) Year 1												
Denominators	N = 4		N = 3		N = 5		N = 3		N = 5		N = 20	
Probing/dental explorer	4	100.0	1	33.3	0	0.0	0	0.0	4	80.0	9	45.0
Radiographs	3	75.0	1	33.3	2	40.0	3	100.0	2	40.0	11	55.0
Intuition/experience	2	50.0	1	33.3	0	0.0	0	0.0	0	0.0	3	15.0
Discolored marg/rest	1	25.0	0	0.0	0	0.0	1	33.3	1	20.0	3	15.0
Caries cavitation	1	25.0	1	33.3	2	40.0	0	0.0	3	60.0	7	35.0
Discolored dentin/enamel	3	75.0	3	100.0	0	0.0	0	0.0	2	40.0	8	40.0
Inspect lesion	1	25.0	0	0.0	0	0.0	0	0.0	0	0.0	1	5.0
What technique or observation led you to the diagnosis of secondary caries? (Mark all that apply) Year 2												
Denominators	N = 18		N = 8		N = 9		N = 7		N = 8		N = 50	
Probing/dental explorer	14	77.8	7	87.5	2	22.2	0	0.0	6	75.0	29	58.0
Radiographs	11	61.1	1	12.5	6	66.7	0	0.0	1	12.5	19	38.0
Intuition/experience	5	27.8	3	37.5	0	0.0	1	14.3	0	0.0	9	18.0
Discolored marg/rest	6	33.3	1	12.5	2	22.2	0	0.0	2	25.0	11	22.0
Caries cavitation	6	33.3	4	50.0	5	55.6	2	28.6	1	12.5	18	36.0
Discolored dentin/enamel	6	33.3	2	25.0	0	0.0	0	0.0	3	37.5	11	22.0
Inspect lesion	1	5.6	0	0.0	0	0.0	0	0.0	0	0.0	1	2.0

- For year one, the technique used most often to diagnose a secondary caries was radiographs at 55% overall, ranging from 33% (FL/GA) to 100% (PDA).
- Probing with the dental explorer was the most common procedure used for year two at 58% overall, ranging from 0% (PDA) to about 88% (FL/GA).
- Overall, inspecting the lesion was the least common procedure used for both year one and year two at 5% and 2% respectively.

8. Where was the clinically diagnosed secondary caries relative to the existing restoration?

- a Gingival to the restoration with carious margin in the enamel
- b Gingival to the restoration with the carious margin in dentin or cementum
- c Other location

Table Q8: Location of secondary caries by DPBRN region

	AL/MS		FL/GA		MN		PDA		SK		TOTAL	
	N	%	N	%	N	%	N	%	N	%	N	%
Where was the clinically diagnosed secondary caries relative to the existing restoration? (Year 1)												
Denominators	N = 4		N = 3		N = 5		N = 3		N = 5		N = 20	
Gingival/carious marg in enamel	1	25.0	0	0.0	1	33.3	0	0.0	0	0.0	2	13.3
Gingival/carious marg in dentin	3	75.0	2	66.7	0	0.0	1	100.0	3	75.0	9	60.0
Other location	0	0.0	1	33.3	2	66.7	0	0.0	1	25.0	4	26.7
Where was the clinically diagnosed secondary caries relative to the existing restoration? (Year 2)												
Denominators	N = 18		N = 8		N = 9		N = 7		N = 8		N = 50	
Gingival/carious marg in enamel	3	16.7	4	57.1	0	0.0	1	25.0	3	50.0	11	27.5
Gingival/carious marg in dentin	13	72.2	1	14.3	2	40.0	3	75.0	1	16.7	20	50.0
Other location	2	11.1	2	28.6	3	60.0	0	0.0	2	33.3	9	22.5

- Considering the location of the secondary caries related to the existing restoration, gingival to the restoration with the carious margin being in the dentin or cementum was the most common location for both year one and year two.