# Studies on Dental Care Services For School Children

## —Third and Fourth Treatment Series, Richmond, Ind.—

By GEORGE E. WATERMAN, D.D.S., and JOHN W. KNUTSON, D.D.S., Dr.P.H.

DURING the first 2 treatment series of the Richmond (Ind.) dental care study project, an average of 4,600 school children, 5 through 16 years of age, received complete dental care (*1*). The study was designed to give dental care services to all school children enrolled in kindergarten through the 9th grade. The project was started in December 1946, and 4 consecutive treatment series were completed 5 years later. A treatment series consisted of examination and treatment of dental defects of all eligible children whose parents requested treatment. Prophylaxis and topical fluoride treatments were included in each series.

*Dr. Waterman, formerly assistant chief of the Division of Dental Public Health, Public Health Service, directed the dental research care program in the Richmond, Ind., schools. He is now chief dental officer of the United States Coast Guard, with headquarters at Washington, D. C. Dr. Knutson, an Assistant Surgeon General, is the chief dental officer of the Public Health Service.*

*Drs. Waterman and Knutson reported on the first and second treatment series of the Richmond dental care study project in the June 1953 issue of Public Health Reports, p. 583.*

### Review of the First Two Series

Baseline data for children participating in the first treatment series indicated that 75 percent had 1 or more decayed permanent teeth, more than 13 percent had 1 or more missing teeth, only 17 percent had 1 or more filled permanent teeth, and 34 percent of the primary teeth were found to be carious. The first treatment series was completed in 24 months. During this time, an average of 4.3 dentists completed dental care for 90 percent of the children treated. The number of dentist man-hours required to complete treatment for each child was 2.88. An average of 2.17 permanent and primary teeth were treated per dentist man-hour.

In the second treatment series, extending over 20 months, approximately 68 percent of the children treated had 1 or more decayed permanent teeth. The average annual increment of decayed permanent teeth between the beginning of the first and second series was 1.19 teeth per child. Complete dental care was given to 98 percent of the group undergoing treatment by an average of 3.9 dentists. The average number of dentist man-hours required to complete treatment of each child in the second series was 1.86.

Performance data on the third and fourth

**Table 1. Age distribution of all children examined, by patient status, 3d and 4th treatment series, Richmond, Ind.**

| Age last birthday | 3d treatment series | | | 4th treatment series | | |
|---|---|---|---|---|---|---|
| | Patient status | | All children | Patient status | | All children |
| | Clinic | Private | | Clinic | Private | |
| All ages | 4, 929 | 844 | 5, 773 | 4, 963 | 873 | 5, 836 |
| 5 | 468 | 58 | 526 | 437 | 58 | 495 |
| 6 | 556 | 71 | 627 | 505 | 70 | 575 |
| 7 | 604 | 79 | 683 | 604 | 74 | 678 |
| 8 | 535 | 79 | 614 | 542 | 70 | 612 |
| 9 | 530 | 86 | 616 | 549 | 78 | 627 |
| 10 | 485 | 75 | 560 | 521 | 83 | 604 |
| 11 | 458 | 86 | 544 | 500 | 83 | 583 |
| 12 | 385 | 66 | 451 | 394 | 85 | 479 |
| 13 | 404 | 88 | 492 | 398 | 97 | 495 |
| 14 | 312 | 106 | 418 | 321 | 100 | 421 |
| 15 | 163 | 44 | 207 | 165 | 64 | 229 |
| 16 | 29 | 6 | 35 | 27 | 11 | 33 |

treatment series will be presented here. (For a report of the design of the Richmond dental care study project, and the complete results of the first two treatment series, see reference *1*.)

### The Followup Program

The dental health education program provided by a full-time educator was continued throughout the duration of the study project. The program consisted of illustrated lectures, moving pictures, puppet shows, pamphlets and poster displays on dental health. It was directed toward all school children in the elementary through junior high school grades. Lectures, movies, and dental health education materials were also made available to PTA groups. A followup program for children not receiving treatment in the clinics provided a fairly accurate account of these children as well as of those children who were receiving treatment. Repeated home calls were made, and conferences with the individual teachers were held in an attempt to have every child visit his dentist regularly if his parents preferred that he not participate in the school clinic program. Approximately 6 percent of the school population received treatment regularly in private dental offices; 7 percent would not seek treatment regardless of the source.

### Clinical Routine

As in the two previous treatment series, the entire school population was examined. At the beginning of each treatment series, "request for treatment" forms were issued to all pupils whether or not they had previously participated in the clinic program.

Since the backlog of dental defects in permanent teeth had been corrected for those children who participated in the study project during the first 2 treatment series, these children required correction only of the carious defects that had developed during the 20-month interval required to complete the second series. Similarly, the children in the fourth series who had received completed treatment in the third series required only correction of the increment of carious defects that had occurred during the 15 months required to complete treatment of the third series. In addition to the increment of carious defects, there was the backlog of carious defects resulting from an influx of children who enrolled in school for the first time during the third and fourth series. Most of these children were in the 5-, 6-, and 7-year age groups.

In the third treatment series, 1,070 children or 22 percent of the treated group were new children who had not previously received clinic care. In the fourth treatment series, there were 859 new children, or 17 percent of the treated

group. Each child was given a prophylaxis during each treatment series. A series of 4 topical fluoride treatments was given each new child participating in the clinic program, and the series was repeated after 3 years.

### Third Treatment Series

During the third treatment series, 5,773 children between 5 and 16 years of age (95 percent of all Richmond school children enrolled in kindergarten through junior high school) were given dental examinations. A total of 4,929, or 85 percent of the group examined, requested and received treatment (see table 1).

This report, like that on the first two treatment series, is primarily concerned with dental care service—baseline and performance data are, therefore, limited to those children who took part in the clinical care program.

To establish an accurate means of measuring and expressing work load for the Richmond dental care study, all teeth requiring fillings, whether or not they had previously been filled, are counted as "carious." Also counted as carious are teeth for which extraction is indicated. X-rays were used at the discretion of the individual dentists. Bite-wing X-rays were made for 17 percent of the children treated in the third and fourth treatment series.

**Table 2. Dental caries prevalence in permanent teeth of children, 3d and 4th treatment series, Richmond, Ind.**

| Age last birthday | Number of teeth per child | | | | | | |
|---|---|---|---|---|---|---|---|
| | Carious | Filled | Carious and/or filled | Missing | | | DMF |
| | | | | Total | Extracted | Extractions indicated [1] | |
| **3d treatment series** | | | | | | | |
| 5–16 [2] | 1.63 | 4.01 | 5.26 | 0.32 | 0.28 | 0.04 | 5.54 |
| 5 | .14 | .00 | .14 | .00 | .00 | .00 | .14 |
| 6 | .61 | .10 | .69 | .01 | .00 | .01 | .69 |
| 7 | 1.13 | .87 | 1.88 | .02 | .01 | .01 | 1.89 |
| 8 | 1.15 | 1.99 | 2.89 | .03 | .02 | .01 | 2.91 |
| 9 | 1.21 | 2.76 | 3.66 | .06 | .04 | .02 | 3.70 |
| 10 | 1.45 | 3.27 | 4.34 | .14 | .09 | .05 | 4.43 |
| 11 | 1.99 | 4.15 | 5.68 | .24 | .19 | .05 | 5.87 |
| 12 | 2.49 | 4.95 | 6.95 | .35 | .30 | .05 | 7.19 |
| 13 | 2.59 | 6.64 | 8.55 | .42 | .38 | .04 | 8.93 |
| 14 | 2.81 | 7.52 | 9.58 | .61 | .50 | .11 | 10.08 |
| 15 | 2.58 | 7.89 | 9.74 | 1.04 | .95 | .09 | 10.69 |
| 16 | 1.45 | 7.97 | 9.03 | 1.03 | .93 | .10 | 9.97 |
| **4th treatment series** | | | | | | | |
| 5–16 [2] | 1.32 | 4.28 | 5.22 | 0.29 | 0.27 | 0.02 | 5.48 |
| 5 | .13 | .01 | .14 | .00 | .00 | .00 | .14 |
| 6 | .57 | .18 | .71 | .00 | .00 | .00 | .71 |
| 7 | .94 | .88 | 1.75 | .01 | .01 | .00 | 1.76 |
| 8 | 1.04 | 1.94 | 2.75 | .04 | .02 | .02 | 2.76 |
| 9 | .87 | 2.83 | 3.40 | .05 | .03 | .02 | 3.43 |
| 10 | 1.10 | 3.32 | 4.09 | .12 | .12 | .02 | 4.19 |
| 11 | 1.46 | 4.32 | 5.43 | .20 | .16 | .04 | 5.58 |
| 12 | 2.03 | 5.45 | 7.03 | .30 | .25 | .05 | 7.25 |
| 13 | 2.39 | 7.12 | 8.76 | .39 | .35 | .04 | 9.11 |
| 14 | 2.04 | 7.88 | 9.25 | .59 | .56 | .03 | 9.81 |
| 15 | 1.58 | 8.79 | 9.77 | .72 | .70 | .02 | 10.47 |
| 16 | 1.67 | 8.59 | 9.52 | 1.07 | 1.07 | .00 | 10.59 |

[1] Also included in "Carious" and "Carious and/or filled."
[2] Average of the rates for ages 5–16.

*Caries Prevalence*

An average annual increment of 0.91 new decayed permanent teeth per child occurred during the interval between the second and third treatment series. Fifty-one percent of the children in the clinic group had 1 or more decayed permanent teeth. Age-specific DMF (decayed, missing, and filled) rates, did not change materially from those of the first and second treatment series. The average for all age groups (5–16 years) was 5.54 DMF teeth per child, of which 1.63 were carious and 4.01 were filled, as compared with 2.87 carious to 3.32 filled teeth per child in the second treatment series (see table 2 and figure 1). Sixty-one percent had 1 or more filled teeth, as compared to 52 percent in the second treatment series. The continued reduction of the number of teeth indicated for extraction reflects the regularity of complete care during the previous treatment series. Nine percent of the children had 1 or more missing teeth, or a total of 774 missing teeth; in addition, 158 teeth were indicated for extraction.

Twenty-three percent of the primary teeth examined were carious. The highest average (4.86 carious teeth) per child was found in the 5-year-old group during this third series,

**Figure 1. Dental caries prevalence in permanent teeth, 3d treatment series, Richmond, Ind., ages 5–16.**

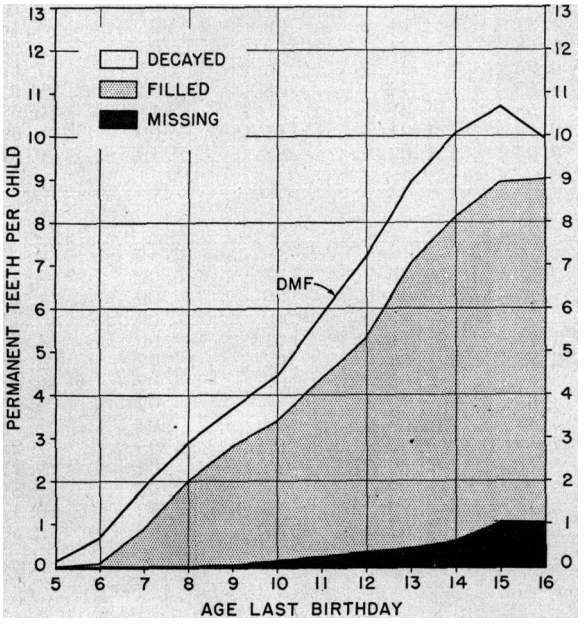
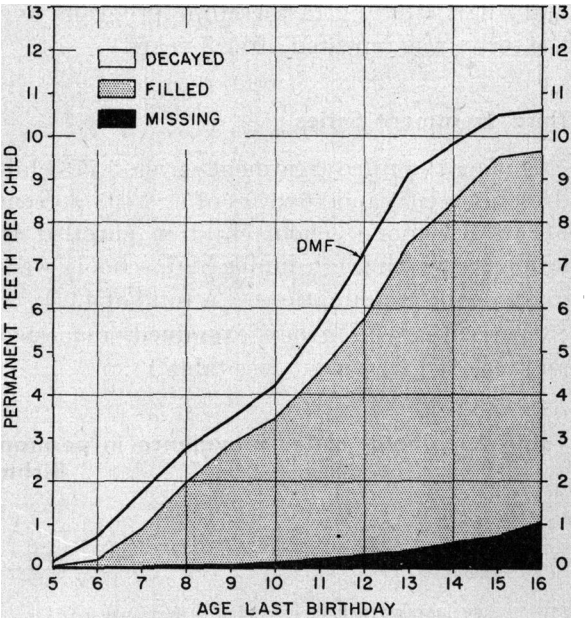



**Figure 2. Dental caries prevalence in permanent teeth, 4th treatment series, Richmond, Ind., ages 5–16.**




whereas in the first treatment series the highest average (5.11 carious teeth) was found in the 7-year-old group (see table 3).

*Treatment Provided*

Ninety-seven percent of the treated group received complete dental care during the third treatment series, and 54 percent of all children treated had 1 or more permanent teeth filled. One hundred and sixty-seven permanent teeth were extracted, or an average of 0.04 teeth per child for all age groups (see table 4). There were 7,795 permanent teeth filled, thereby restoring 11,143 surfaces. The age-specific filled tooth rates (table 4) exceed in most instances the age-specific caries rates for corresponding ages (table 3). This difference reflects the practice of prophylactic odontotomy in selected cases.

Since many of the children were on maintenance care during this series, it was practical to provide an increased amount of reparative treatment for the primary teeth. This included filling 3,631 primary teeth and restoring 6,493 surfaces. There were 2,016 extractions of primary teeth.

A total of 227 pulps were capped, and 31 vital partial pulpectomies were performed on permanent and primary teeth.

Topical fluoride applications were given to 2,099 children in this series.

### *Dentist Man-Hours*

An average of 3.9 dentists were on duty during the third treatment series, or a ratio of 1 dentist to 1,009 children treated a year. As the report on the first and second series indicated (*1*), the dentist-staffing average was based on a full 65-hour biweekly period for all dentists assigned to the project. No deductions were made for administrative work, vacations, illness, training, and so forth.

Dentist man-hour rates were determined from the total clinic time for all dentists during the 15 months of the third treatment series. The average number of dentist man-hours required to complete treatment of each child in the third treatment series was 1.17. In addition to miscellaneous treatment provided, an average of 1.48 permanent and 0.65 primary teeth were filled per dentist man-hour.

## Fourth Treatment Series

Dental examinations were given in the fourth and final treatment series to 5,836 children, or 95 percent of all Richmond children in kindergarten through the 9th grade. A total of 4,963, or 85 percent of the group, elected to receive treatment in the school clinics (see table 1). This group included 859 children, largely in the kindergarten and 1st grade, who had not been enrolled in the Richmond schools during the third treatment series.

### *Caries Prevalence*

Only 43 percent of the children had 1 or more decayed permanent teeth, as compared with 75 percent of the treated children in the first treatment series. There were 5,963 decayed permanent teeth, approximately 12,000 less than in the first treatment series even though nearly 400 more children were treated in the final series.

The average annual increment of new decayed permanent teeth between the last third and fourth treatment rounds was 1.01 teeth per child.

**Table 3. Dental caries prevalence in primary teeth of children, 3d and 4th treatment series, Richmond, Ind.**

| Age last birthday | Number of teeth per child | | | |
|---|---|---|---|---|
| | Carious | Filled | Carious and/or filled | Extractions indicated [1] |
| **3d treatment series** | | | | |
| 5–16 [2] | 1. 54 | 1. 07 | 2. 45 | 0. 26 |
| 5 | 4. 86 | . 58 | 5. 29 | . 55 |
| 6 | 3. 79 | 2. 09 | 5. 53 | . 48 |
| 7 | 2. 86 | 2. 81 | 5. 24 | . 43 |
| 8 | 2. 28 | 3. 07 | 4. 95 | . 47 |
| 9 | 2. 04 | 2. 14 | 3. 88 | . 50 |
| 10 | 1. 43 | 1. 32 | 2. 54 | . 33 |
| 11 | . 84 | . 64 | 1. 33 | . 26 |
| 12 | . 31 | . 17 | . 46 | . 07 |
| 13 | . 07 | . 03 | . 09 | . 01 |
| 14 | . 02 | . 01 | . 03 | . 01 |
| 15 | . 02 | . 00 | . 02 | . 00 |
| 16 | . 00 | . 00 | . 00 | . 00 |
| **4th treatment series** | | | | |
| 5–16 [2] | 1. 27 | 1. 25 | 2. 37 | 0. 18 |
| 5 | 4. 55 | . 76 | 5. 15 | . 55 |
| 6 | 3. 10 | 2. 51 | 5. 32 | . 34 |
| 7 | 2. 15 | 3. 28 | 5. 08 | . 28 |
| 8 | 1. 71 | 3. 24 | 4. 61 | . 30 |
| 9 | 1. 56 | 2. 71 | 3. 96 | . 27 |
| 10 | 1. 17 | 1. 50 | 2. 45 | . 23 |
| 11 | . 65 | . 68 | 1. 22 | . 13 |
| 12 | . 21 | . 27 | . 44 | . 03 |
| 13 | . 10 | . 05 | . 14 | . 03 |
| 14 | . 03 | . 03 | . 06 | . 00 |
| 15 | . 00 | . 01 | . 01 | . 00 |
| 16 | . 00 | . 00 | . 00 | . 00 |

[1] Also included in "Carious."
[2] Average of the rates for ages 5–16.

The average number of carious permanent teeth for all age groups (5–16 years) is now 1.32 teeth per child, as compared with an average of 5.08 teeth per child at the beginning of the study project. There existed an average of 0.47 less DMF teeth per child in the fourth round of treatment than in the first. Only 99 teeth, or an average of 0.02 per child, were indicated for extraction in the final series, as compared with 815 teeth, an average of 0.24 per child, in the first series. Approximately 65 percent of the children examined had at least 1 filled permanent tooth, compared with only 17 percent at the beginning of the first series (see table 2 and figure 2).

In the first series, 5-year-olds, newcomers to

the clinic program, had 0.31 carious permanent teeth and no filled teeth. Four years later, when they were 9 years old, many of these children were included in the group reexamined before the beginning of the fourth treatment series. At that time, they had 0.87 carious permanent teeth, 2.83 filled teeth, and 0.05 missing teeth—one-fourth as many carious, 7 times as many filled, and one-third as many missing permanent teeth as the 9-year-olds in the first treatment series.

Thirteen-year-olds examined in the first treatment series had 7.41 carious permanent teeth, 1.46 filled, and 1 missing. Those who were 13 at the time of the fourth treatment series, many of whom from the time they were 9 had had the benefit of 4 years of clinic care, had 2.39 carious, 7.12 filled, and 0.39 missing permanent teeth—one-third as many carious, nearly 5 times as many filled, and only two-fifths as many missing teeth as their counterparts in the initial baseline examination.

Inasmuch as caries of the primary teeth begins to accumulate before the majority of the kindergarten and 1st grade children entered the clinic program, a lifetime accumulation of dental defects in this dentition was in need of repair. Some reduction of the prevalence of carious primary teeth was prevented, however, because the age (5 years) at which children were available for clinic care precluded restorative treatment to the 4 incisor teeth.

In the final treatment series, the highest prevalence rate of carious teeth was in the

**Table 4. Dental treatment to permanent and primary teeth of children, 3d and 4th treatment series, Richmond, Ind.**

| Age last birthday | Number of teeth per child | | | | | |
|---|---|---|---|---|---|---|
| | Permanent teeth | | | Primary teeth | | |
| | Filled | Filled surfaces | Extracted | Filled | Filled surfaces | Extracted |
| **3d treatment series** | | | | | | |
| 5–16 [1] | 1.71 | 2.42 | 0.04 | 0.58 | 1.03 | 0.33 |
| 5 | .18 | .24 | .00 | 2.91 | 5.37 | .58 |
| 6 | .78 | 1.09 | .01 | 1.96 | 3.47 | .58 |
| 7 | 1.30 | 1.90 | .01 | 1.28 | 2.25 | .55 |
| 8 | 1.27 | 1.96 | .01 | .55 | .98 | .58 |
| 9 | 1.27 | 1.92 | .03 | .14 | .19 | .60 |
| 10 | 1.51 | 2.16 | .06 | .05 | .08 | .43 |
| 11 | 2.09 | 2.95 | .06 | .02 | .03 | .37 |
| 12 | 2.64 | 3.60 | .06 | .01 | .02 | .15 |
| 13 | 2.73 | 3.76 | .04 | .01 | .01 | .05 |
| 14 | 2.82 | 4.04 | .10 | .01 | .02 | .03 |
| 15 | 2.58 | 3.66 | .10 | .00 | .00 | .04 |
| 16 | 1.35 | 1.79 | .03 | .00 | .00 | .00 |
| **4th treatment series** | | | | | | |
| 5–16 [1] | 1.36 | 1.94 | 0.02 | 0.45 | 0.77 | 0.22 |
| 5 | .17 | .22 | .00 | 2.41 | 4.45 | .52 |
| 6 | .63 | .83 | .01 | 1.43 | 2.45 | .39 |
| 7 | 1.01 | 1.40 | .00 | .96 | 1.63 | .35 |
| 8 | 1.06 | 1.59 | .02 | .33 | .55 | .32 |
| 9 | .88 | 1.23 | .02 | .06 | .10 | .35 |
| 10 | 1.08 | 1.55 | .02 | .01 | .01 | .33 |
| 11 | 1.46 | 2.01 | .04 | .00 | .00 | .17 |
| 12 | 2.06 | 2.84 | .04 | .00 | .00 | .08 |
| 13 | 2.43 | 3.50 | .04 | .00 | .01 | .06 |
| 14 | 2.08 | 3.22 | .05 | .00 | .00 | .02 |
| 15 | 1.61 | 2.35 | .02 | .01 | .01 | .00 |
| 16 | 1.82 | 2.59 | .00 | .00 | .00 | .00 |

[1] Average of the rates for ages 5–16.

5-year-old group (4.55 per child). For each age, beginning with 6, the number of carious primary teeth per child showed steady decrease with each successive treatment series, whereas the number of filled teeth per child increased in each successive series. By and large, a similar inverse relationship is true between teeth indicated for extraction and filled teeth.

The average number of decayed primary teeth in the age 7 group was 2.15 in the final treatment series, compared with 5.11 in the first series (see table 3).

Approximately 19 percent of the primary teeth examined were found to be carious. Thirty-four percent were found carious in the initial treatment series. Forty-three percent of the children now had 1 or more filled teeth, compared with 9 percent at the beginning of the first series.

### *Treatment Provided*

Ninety-nine percent of the treated children received complete treatment during the final treatment series. A total of 6,112 permanent teeth were filled, thereby restoring 8,700 surfaces. Forty-four percent of the children had 1 or more teeth filled, as compared with 70 percent in the first series. Prophylactic odontotomy in selected cases probably accounts for the fact that the average age-specific rates of teeth filled per child in the fourth series exceed the carious tooth rates per child. The average number of surfaces restored per child in the final series is 1.94 compared with 6.65 in the initial series. There were 105 permanent teeth extracted, or an average of 0.02 per child, as compared with 0.24 during the initial series (see table 4).

In the fourth treatment series, 2,638 primary teeth were filled, and 4,534 surfaces were restored. An average of 0.22 teeth per child in all age groups or 1,323 teeth were extracted.

There were 231 pulps capped; and 34 vital partial pulpectomies were performed on permanent and primary teeth. During the final series, 1,358 children were given 4 applications of sodium fluoride.

### *Dentist Man-Hours*

The final series required 11 months to complete treatment for approximately 4,950 children. An average of 4.05 dentists were on duty, or a ratio of 1,343 children were treated per dentist per year. During the initial series, an average of 4.3 dentists required 24 months to complete treatment for 4,057 children; each dentist treated an average of 530 children a year.

**Table 5. Selected comparative data for the 4 treatment series, Richmond, Ind.**

| Comparative data | Treatment series | | | |
|---|---|---|---|---|
| | 1st | 2d | 3d | 4th |
| Clinic patients | 4, 569 | 4, 797 | 4, 929 | 4, 963 |
| Prevalence data (per child, aged 5–16): | | | | |
| Carious permanent teeth | 5. 08 | 2. 87 | 1. 63 | 1. 32 |
| Filled permanent teeth | . 83 | 3. 32 | 4. 01 | 4. 28 |
| Man-hours per year: | | | | |
| Children treated per dentist | 530 | 743 | 1, 009 | 1, 343 |
| Dentist man-hours per child | 2. 88 | 1. 86 | 1. 17 | . 75 |
| Treatment (per child, aged 5–16): | | | | |
| Permanent teeth filled | 4. 20 | 2. 83 | 1. 71 | 1. 36 |
| Permanent teeth extracted | . 24 | . 05 | . 04 | . 02 |

Dentist man-hour rates were determined from the total clinic time for all dentists during the 11 months of the fourth treatment series. An average of 0.75 of a dentist man-hour was required for each patient completing treatment in the final series, whereas 2.88 dentist man-hours were required for each patient in the initial series. Teeth were filled at an average rate of 1.75 permanent and 0.75 primary teeth per dentist man-hour.

### Summary of All Four Series

An average of 4,800 school children, kindergarten through the 9th grade, were given complete dental treatment in each of 4 treatment series in the Richmond dental care project. These constituted about 85 percent of the children enrolled in the Richmond schools. Another 6 percent of all children in the Richmond schools had regular dental care from their own dentists. Seven percent sought no care at all.

Examination during the first treatment

series showed an average of 0.83 filled permanent teeth for children aged 5–16. During the fourth series, the corresponding rate was 5 times as high, or 4.28 per child. Similar comparison for total missing teeth shows an average per child of 0.61 in the first series and 0.29 in the fourth—a reduction of more than half.

In the first treatment series, 6.65 permanent tooth surfaces per child were filled. In the final series, the number of surfaces requiring fillings was only 1.94, or three-tenths as many as in the first.

Even with the minimal amount of care given to primary teeth, the filled tooth rate per child increased from an average of 0.22 teeth per child, aged 5–16, in the first treatment series to 1.25 per child in the fourth treatment series, or more than a fivefold increase.

In the first treatment series, each dentist was able to care for 530 children during the course of a year. At the time of the fourth round of clinic care, dental needs had been reduced to the point where 1,343 children a year were cared for by 1 dentist. Thus, while an average of 2.88 man-hours of treatment for each child was required in the first treatment series, only 0.75 of a man-hour was needed in the fourth. This includes the time required to treat 859 children who had not been treated previously (see table 5).

With the exception of new patients, permanent teeth required only maintenance care during the last three treatment series. The influence this exerts on the average time required to complete treatment for each child is evident from the fact that an average of 2.88 dental man-hours were required to complete treatment during the initial round (when most of the children had a lifetime accumulation of dental defects), as compared with an average of 0.75 of a dental man-hour in the final round of treatment.

Using approximately the same personnel ratio, the number of months to complete each treatment series was 24, 20, 15, and 11, respectively. Naturally, there was an overlap between treatment series when treatment was being provided in two treatment series simultaneously.

The total elapsed time to complete the 4 treatment series was 5 years.

#### REFERENCE

(1) Waterman, G. E., and Knutson, J. W.: Studies on dental care services for school children—First and second treatment series, Richmond, Ind. Pub. Health Rep. 68: 583–589 (1953).

## Institutes on the Care of Premature Infants

Institutes are being held for physicians and nurses on the care of premature infants at the New York Hospital-Cornell Medical Center. The institutes, now in their fifth year, are sponsored by the New York State Department of Health and the United States Children's Bureau. Physicians and nurses in charge of premature nurseries in hospitals and special premature centers and medical and nursing directors and consultants in State and local programs are invited to attend.

The attendance at each institute is limited to six physician-nurse teams. The program for physicians is for 2 weeks and for nurses it is 4 weeks. Participants pay no tuition fee and stipends are provided to help cover expenses during attendance at the institute.

The last institute for the current fiscal year starts on May 17, 1954. Five institutes will be held between September 1954 and May 1955. Additional information may be obtained by writing Box 143, Institute in the Care of Premature Infants, The New York Hospital, 525 East 68th Street, New York 21, N. Y.