EXPERT REPORT OF:

JAY D. SHULMAN, DMD, MA, MSPH

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DALLAS, TEXAS 75231

In The Matter Of

JOSHUA DUNN, *et al.*, Plaintiffs, v.

JEFFERSON S. DUNN, *et al.*, Defendants

CIVIL ACTION NO.: 2:14-cv-00601-MHT-TFM

MIDDLE DISTRICT OF ALABAMA
NORTHERN DIVISION

JULY 5, 2016

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I. INTRODUCTION

A. Qualifications

I have been retained by Plaintiffs' counsel in the *Dunn* case as an expert in dental care in correctional institutions. I have been a dentist for over 45 years and have had careers in the military, dental education, and correctional dentistry consulting. I am certified by the American Board of Dental Public Health, one of nine specialties recognized by the American Dental Association. Dental Public Health "is that part of dentistry providing leadership and expertise in population-based dentistry, oral health surveillance, policy development, community-based disease prevention and health promotion, and the maintenance of the dental safety net." [American Dental Association Oral Health Topics: Dental Public Health[1]]. I also have extensive experience auditing educational, military, and correctional dental programs. My *curriculum vitae* is attached as Exhibit A.

During my 22-year military career, I had clinical, research, administrative, and command assignments in the United States, Okinawa, and Germany. Among my assignments, I served as the Army Surgeon General's Dental Public Health Consultant and wrote dental public health policy, procedures, and technical guidance. As Commander of the 86th Medical Detachment, I directed dental care delivery for the Army in north central Germany and operated six clinics with 20 dentists and 60 ancillary personnel. I was responsible for the dental health of 25,000 soldiers and family members. Among the studies I planned when I was in a research position were several on the Army's Dental Fitness Classification System, in which dentists assign patients to treatment priority groups based on the severity of dental needs.

I have served as a correctional dentistry consultant, court expert/representative, and expert witness several times since 2005. As a court expert in two major class action settlements involving prisoner dental care, I developed an audit process based on reviewing clinical records and performed system-wide audits of programs in California (roughly 170,000 inmates in 33 institutions) and Ohio (roughly 50,000 inmates in 30 institutions) over a 5-year period. Moreover, I was retained as a dental expert by the U.S. Department of Justice ("DOJ") in an investigation of a prison's dental care under the *Civil Rights of Institutionalized Persons Act.* A complete list of the cases for which I served as an expert is attached as Exhibit B.

I have performed clinical dentistry and supervised dental and dental hygiene students at the Dallas County Juvenile Detention Center. My work in the military and correctional dentistry, as well as my training in Dental Public Health focusing on population-based care, have given me unique expertise to discuss not only specific incidences of dental care, but system-wide deficiencies in dental care and the effects those deficiencies are likely to have on inmate populations. A complete list of the cases for which I served as an expert is in my *curriculum vitae*.

I have written 57 peer-reviewed articles and four book chapters, served as a reviewer for several dental journals as well as the editorial board of the *Journal of Public Health Dentistry*, the official journal of my specialty. Many of the papers I wrote during my academic career related to the epidemiology of dental disease: caries (tooth decay), periodontal disease, and oral

[1] Full citations are available in Exhibit C: Materials Reviewed.

lesions. Five publications relate to correctional dentistry. A complete list of my publications is included in my *curriculum vitae*.

I have been asked to render my opinion as to (1) whether the Alabama Department of Corrections ("ADOC") dental program subjects prisoners to a substantial risk of serious harm/injury, and (2) if so, whether the risk of harm/injury is due to the dental program's systemic deficiencies. As explained further below, my opinions are based on a review of dental records of the Plaintiffs and other prisoners as well as documents, reports, and depositions available at this time, as listed in Exhibit C, as well as the scientific literature. In addition, the opinions are based on my 45 years of professional experience in dentistry and are made to a reasonable degree of dental certainty. My opinions are based on the information available for review. If additional information is provided, I will reevaluate these opinions.

B. Description of Dental Conditions

1. Dental Caries

Dental caries (tooth decay) is an infectious disease characterized by progressive destruction of tooth substance, beginning on the outer (enamel) surface or the exposed root surface. Left untreated, the decay can progress, causing pain and leading to tooth loss, localized infection (dental abscess), and occasionally, systemic infection.

Caries is typically diagnosed visually and/or radiographically. The visual appearance ranges from a "white spot" on the enamel to a gaping hole in the tooth with black staining characteristic of end-stage caries. Figure 1 is a representation of how different stages of caries may appear on a radiograph ("x-ray").

Figure 1. Interproximal Decay as Seen on a Radiograph

A. Incipient **B. Moderate / Advanced** **C. Severe**

An incipient lesion (Figure 1A) may not be readily identified clinically because there is no "cavity" in the tooth and too little tooth has been affected to be seen on a radiograph. Once the lesion reaches the dentin (early Figure 1B)—a tissue less resistant to decay than enamel—the patient should be scheduled for treatment. Figure 1C shows an advanced lesion that is almost through the dentin to the pulp. When decay reaches the pulp, the tooth will require either endodontic (root canal) treatment or extraction. Caries radiographically at or beyond the dentin should receive prioritized treatment to prevent deterioration to the point that the only practical alternative is extraction.

A tooth classified as requiring routine (as opposed to urgent) treatment typically will not remain asymptomatic indefinitely. Caries, especially once the enamel is penetrated, generally progresses, and the more time that passes before the tooth is treated (*i.e.*, filled), the greater the

likelihood that decay will progress. Progression of decay destroys tooth structure, possibly causes an abscess, and often requires extraction. Consequently, any classification system must have timelines to ensure that a tooth originally classified as routine does not develop a severe problem due to untimely treatment.

Caries progression is a function of the interaction of risk factors; (1) the presence and virulence of cariogenic bacteria in the dental plaque, (2) the susceptibility of the tooth to the caries process, (3) the presence of sugars and fermentable carbohydrates in the diet, and (4) time [Dental Caries and Associated Risk Factors at 48-50].[2]

To summarize, because decay generally progresses if untreated, untimely treatment even of asymptomatic decayed teeth could put prisoners at risk of preventable pain, increased tooth morbidity (making the tooth more difficult to restore), or tooth loss. While decay progression is highly variable in a population, from my experience as an oral epidemiologist, I am comfortable stating that in a large population such as that of the ADOC, many individuals subjected to treatment delays will suffer tooth morbidity as well as tooth loss.

2. Pulpitis

Pulpitis is an inflammation of the living tissue within the tooth. Reversible pulpitis will resolve when the source of irritation is treated or removed. Typically, reversible pulpitis is attributed to minor tooth fractures, caries (decay), defective or missing fillings, and occlusal (bite) discrepancies and can be treated with analgesics and a dental procedure. The dental procedures may include removing decay and inserting a new or replacement filling, adjusting the bite, and applying desensitizing agents [Treatment of Odontogenic Pain in a Correctional Setting ("Shulman and Sauter") at 63].

When the inflamed living tissue inside the tooth (the pulp) swells and circulation is compromised, pulpitis becomes irreversible. A tooth with irreversible pulpitis has a partially vital pulp with inflammation and degeneration that is not expected to improve. Once pulp death (necrosis) occurs, the tissue is vulnerable to attack by bacteria, leading to infection at the apex of the tooth. Eventually this infection spreads by resorbing bone and supporting structures [*Id.* at 63-64].

3. Lost Fillings or Crowns

It is not uncommon for fillings to fracture and fall out in whole or in part due to wear or underlying decay. Any underlying decay should be removed expeditiously because it is generally within the dentin and close to the pulp. Decay near the pulp may lead to irreversible pulpitis and can jeopardize the prognosis of the tooth.

[2] Among the factors affecting caries progression is xerostomia (hyposalivation or dry mouth) [Psychotropic-Induced Dry Mouth at 53]. Xerostomia is a side-effect of many drug classes such as antidepressants, anticonvulsants, anxiolytics, antipsychotics, anticholinergics, and alpha agonists [*id.* at 54]; a phenomenon known as polypharmacy ("[…] the use of multiple medications increases the risk of adverse medication side effects") [*Id.*] Many prisoners take one or more of drugs in these classes and are particularly vulnerable to rapid caries progression [*Id.*].

When a filling falls out or fractures, the filling must be replaced in a timely manner to protect the pulp of the tooth from the effects of dentinal sensitivity, which is pain brought on by such stimulating factors as cold and sweet [Examination, Diagnosis, and Treatment at 1-2]. The longer dentinal sensitivity persists the greater the likelihood that what initially may have been a reversible condition will develop into irreversible pulpitis requiring a root canal or extraction. The structural integrity of the tooth also may be impaired, making it vulnerable to fracturing during normal chewing. Consequently, even a tooth in which the pulp is not exposed may develop irreversible pulpitis if the filling is not timely replaced or repaired.

4. Fractured Teeth

Fractures of the teeth are often the result of trauma and can be difficult to diagnose. Non-vital teeth are more susceptible to fracture than vital teeth due to the loss of their blood supply (pulp). Moreover, because they are "dead", there is no pain associated with the fracture. The broken tooth, however, may become an irritant to the soft tissues.

Fractured teeth are generally classified into three categories: (1) enamel only, (2) enamel into dentin, and (3) fractures involving the pulp. Fractures that extend only into the enamel are usually asymptomatic and do not require immediate dental treatment unless the tooth is an irritant to the lips, tongue, or cheeks. In contrast, fractures that extend into the dentin are usually symptomatic, causing tenderness, reaction to thermal changes, and pain. While not an emergency, they should be treated to relieve the symptoms. The greater the area of exposed dentin the more urgent the treatment need because the pulp can become necrotic, resulting in infection. Fractures that extend into vital pulp often cause severe pain and are considered an emergency. Bleeding from the pulp can be seen in some cases, usually as a small pinpoint of red in the dentin. These fractures should be treated as soon as possible.

To summarize, the longer the dentin of the tooth is exposed to the oral environment, (from a lost filling, fractured tooth, or a crown that has fallen off), the greater the likelihood that the pulpitis will become irreversible and absent endodontic treatment, the tooth will require extraction. This places a premium on timely diagnosis and treatment.

5. Chewing Difficulty

Chewing difficulty can be caused by pain associated with decayed, broken-down, or infected teeth. This can be addressed by timely repair or extraction of the problematic teeth. Another type of chewing difficulty is the result of an inadequate number of opposing teeth[3]. This can be addressed by fabricating prosthodontic appliances (*i.e.*, dentures)[4]. Tooth loss is not satisfactorily compensated for by removable prostheses since the masticatory efficiency of a

[3] Opposing teeth are teeth that are positioned so that they can crush or tear food between them. In the absence of opposing teeth, food is crushed against soft tissue – which can be a source of pain.

[4] While prescribing a soft diet may be a short term measure until the denture is fabricated, edentulousness can be a serious problem since it reduces chewing performance and affects food choice.

denture wearer is far from matching that of a fully dentate person[5]; however, people with impaired mastication may cope with feeding by either adapting their food choices or swallowing coarse particles that make the problem a digestive one. The first type of behavior is known to induce imbalance in dietary intake, and the second may result in decreased bioavailability of nutrients and gastrointestinal disturbances. In both situations, the impaired dietary or nutrient intake may increase nutrition-induced disease risks. [Influence of Impaired Mastication on Nutrition at 667].

Tooth loss has been associated with changes in food preference and nutritional deficiency although the evidence that people whose mastication is impaired by tooth loss are more likely to be underweight is conflicting [The Relationship between Oral Health Status and Body Mass Index among Older People [The Relationship between Oral Health Status and Body Mass Index among Older People at 703]. Individuals with limited chewing ability are at risk for nutrition problems that have different physical manifestations. First, chewing may be so painful that an individual has an inadequate caloric intake – as evidenced by weight loss and reduced Body Mass Index ("BMI"). Second, people with a compromised dental status may avoid hard-to-chew foods and instead choose processed foods, favoring the absorption of cholesterol and saturated fatty acids, or may prefer simple carbohydrate-rich diets that are high in calories but low in dietary fiber, vitamins, and protein, thus leading to weight gain [Relationship between Body Fat and Masticatory Function at 120]. In this case, weight gain would be ***pathologic*** and not evidence that the individual had no chewing difficulty.[6]

To summarize, the association between chewing difficulty and weight loss is not clearly established and there is a body of studies explained by plausible scientific mechanisms that support the association between chewing difficulty and (pathologic) weight loss or gain. Moreover, the literature suggests that weight gain may occur in the presence of chewing difficulties. Consequently, that a prisoner has not lost weight or, in fact, may have gained weight, does not necessarily rule out chewing difficulties.

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[5] While the chewing efficiency of removable dentures is less than that of natural teeth, dentures 1) do improve chewing efficiency and 2) protect the soft tissue from abrasion from food during chewing.

[6] While one might naively assume that weight gain necessarily is evidence of an absence of chewing problems, prisoners generally gain weight during incarceration [The Impact of Incarceration on Obesity at 4]. Whether this is due to lack of physical activity, the effects of medication, stress, or commissary purchases is unresolved. [*Id*. at 6].

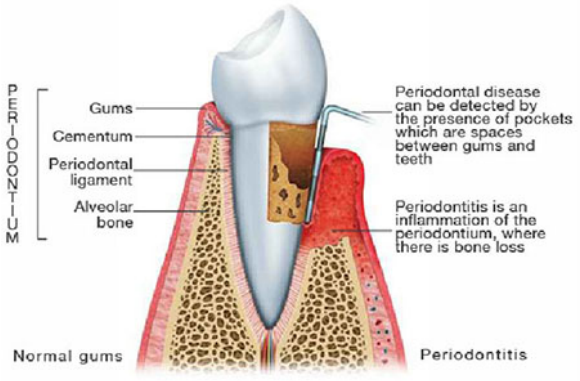
Many drugs commonly prescribed for chronic disease have weight gain as an adverse effect [Weight Gain as an Adverse Effect of Some Commonly Prescribed Drugs at 395] and many are commonly prescribed to prisoners. Weight gain can arise due to differing mechanisms; such as increased appetite (*e.g*., corticosteroids) or reduced metabolic rate (*e.g*., beta-adrenoceptor blockers) [*Id*. at 396]. A systemic review of drug clinical trials found that drug classes such as used to treat Type 2 diabetes (insulin, sulphonylureas, thyiazolinidiones), hypertension (beta-blockers), inflammatory disease (corticosteroids), psychosis (antipsychotics), epilepsy, depression (tricyclic antidepressants), and bipolar disorder (Valproate, Lithium) are considered to be obesogenic [*Id*. at 396].

6. Periodontal Disease

Periodontal disease is an inflammatory disease of the supporting tissues of the teeth resulting in the progressive destruction of the periodontal ligament and the alveolar bone with pocket formation, gingival recession, or both and resulting tooth loss [Epidemiology of Periodontal Diseases ("Cappelli and Shulman") at 14]. Periodontal disease is linked to obesity, smoking, diabetes mellitus, osteoporosis, heart disease, stroke, pulmonary infections, and renal disease. It is a chronic condition and is classified among the routine care needs of inmates [Guidelines for a Correctional Dental Health Care System ("NCCHC Guidelines") at 171 (included in the Correctional Dental Associates ("CDAA") Dental Resources Binder at Dunn(Corizon)_10223))].

Figure 2 compares normal periodontium to that which has been damaged by periodontal disease. Note that periodontal probe is inserted in a space created where the periodontal ligament and alveolar bone were destroyed. The probe measures the depth of the periodontal pocket (in millimeters). These measurements are recorded by dentists and dental hygienists to establish a baseline and to assess disease progression over time.

Figure 2. Normal and Diseased Periodontium



C. Standard of Dental Care in Prisons[7]

While the scope of services may be less extensive, the standard for quality is the same in a correctional institution as it is in the community at large [Correctional Dental Services ("Makrides *et al*.") at 557]. The focus of correctional dentistry is the control of acute and chronic dental pain, stabilization of dental pathology, and maintenance or restoration of function. Dental treatment should not be limited to extractions and should include restorations (fillings) [*Id.*]. These standards of dental care are based on my research and understanding of the law, the care provided in the community, and the care provided in institutions. The standard of care used in the community at large is instructive because that standard is based on the type of care needed to protect patients from unnecessary pain and dental injury [*Id*.].

[7] No single source or reference defines the standard of dental care in prisons; however, the totality and consistency of the correctional and non-correctional references sets forth the contours of the standard.

1. Timeliness of Care

Prisoners are entitled to timely treatment of their serious dental needs as well as timely routine care, which is needed to prevent the occurrence of more serious dental injuries. Standards of dental care in the community and for correctional dentistry hold that inmates should not be forced to suffer pain or other dental injuries if those injuries could have been avoided by timely care [Lake County Jail Settlement Findings Letter at 15]. Similarly, the DOJ has held that the *Civil Rights of Institutionalized Persons Act* requires institutions to provide dental care consistent with generally accepted professional standards and to have sufficient treatment capacity that care is provided in a timely manner [*See, e.g.*, Dallas County Agreed Order § III(A)(13) (mandating reforms in the dental care provided by the jail); Cook County Agreed Order § III(c)(58) (requiring the jail to "ensure that inmates receive adequate dental care, and follow up, in accordance with generally accepted correctional standards of care. Such care should be provided in a timely manner, taking into consideration the acuity of the problem and the inmate's anticipated length of stay.")].

Because dental conditions can progress absent timely treatment, it is important for a dental care system to have appropriate policies, procedures, protocols and sufficient treatment capacity to ensure that the treatment of painful conditions is sufficiently timely to prevent gratuitous pain[8]. Moreover, asymptomatic conditions should be diagnosed and treated before they progress to the point that they cause pain, preventable loss of tooth structure, or result in a previously restorable tooth becoming non-restorable.[9]

> Delaying or deferring restorative care in a correctional setting simply leads to an increase of oral pain, infection, or tooth loss. As a result, dental services become inundated with emergency dental sick-call requests and more procedures to replace lost teeth with removable prosthetics.

[NCCHC Guidelines at 170 (included in CDAA Dental Resources Binder at Dunn(Corizon)_10222)].

2. Access to Care

A prison system must be staffed with dental professionals qualified to provide inmates with needed dental care. Inadequate staffing causes delay and puts inmates at a substantial risk of pain and serious injury. However, an appropriately staffed dental department is necessary but not sufficient to ensure timely access to care. Dental staff must be accessible, not merely "available" [The Organization of a Correctional Dental Program ("Shulman *et al.* at 58")]. That inmates are

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[8] "Providing restorations and periodontal care to offenders is the first priority in eliminating active dental disease. The interval between appointments should be brief enough that teeth that were initially categorized as requiring routine care do not become urgent care problems" [Shulman *et al*. at 57].

[9] Not only must restorations (fillings) be provided, but treatment should be timely so that teeth that could be filled will not deteriorate to the point that extraction is necessary. Systematic untimeliness in providing routine care is, in effect, a *de facto* extraction only policy and thus, highly problematic [Shulman *et al*. at 56].

in restricted housing does not relieve the institution of the responsibility of ensuring that they are brought to dental appointments.

3. Treatment of Odontogenic Pain and Infection

Regardless of the size of an institution or the level of dental care provided, the requirement to treat toothaches (*i.e.*, urgent care) is common to all correctional facilities. Among the possible non-traumatic causes of tooth pain are (a) tooth fractures (often, a tooth that has been weakened splits in the course of normal chewing), (b) pulpitis, (c) caries (decay) extending through the enamel into dentin, (d) dental (periapical or periodontal) abscess, and (e) cellulitis (a diffuse inflammation of the connective tissue caused by a spreading bacterial infection just below the skin surface) [Shulman and Sauter at 63].

Managing patients' pain is an important part of dental practice. Pain is managed by the appropriate use of analgesics as well as expediting the treatment of patients whose complaints of pain are clinically validated.[10] "Offenders should be scheduled to see a dentist within 72 hours since only a dentist is qualified to make a definitive diagnosis on dental issues and determine the clinically appropriate sequence of care"[11] [Shulman *et al*. at 56].

The standard of care for managing odontogenic infections is prompt removal of the source of the infection, which is commonly a necrotic pulp[12] or a deep periodontal pocket. Any successful therapy must include drainage of accumulated pus and necrotic debris. Antibiotics given to a patient with an odontogenic infection do not resolve the underlying problem (*i.e*., the infected tooth); and the source of the infection should be removed promptly by extraction or root canal therapy; while the patient has a therapeutic blood level of antibiotic [Shulman and Sauter at 66]. Consequently, patients who are prescribed an antibiotic for a dental abscess should be scheduled for definitive treatment within 7 to 10 days, depending on the length of the antibiotic therapy.

When removal of the source of the infection is delayed, the infection can recur requiring another course of antibiotics. Such a recurrent infection subjects a patient to preventable pain and makes him vulnerable to developing antibiotic resistance. Bacterial resistance to antibiotics has been clearly associated with exposure to antibiotics, the inappropriate use and the increased volume of which has elevated bacterial resistance to a major public health concern and has made an increasing number of infectious diseases difficult to treat. Although the problem has been recognized for many years, injudicious use of antibiotics continues to be a major public health problem [Shulman and Sauter at 67].

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[10] "Dental conditions such as toothache, post-dental-extraction pain, and abscess not involving the orofacial spaces may be painful and are usually classified as urgent dental needs that do not requiring emergency care. Dental emergencies should receive immediate attention, whereas urgent dental needs could be evaluated within 72 hours of receiving an inmate's complaint" [NCCHC Guidelines (included in the CDAA Resources Binder at Dunn(Corizon)_10219)].

[11] Even if the offender has been assessed by a non-dentist qualified health care professional, an offender stating dental pain should be seen by a dentist within 72 hours.

[12] Through endodontic treatment or extracting the tooth.

To summarize, when a patient has been prescribed antibiotics for a dental infection, the accepted professional standard is to remove the source of the infection during the course of antibiotic therapy. The longer the delay in removing the source of the infection, the more likely the abscess will recur – with attendant pain and additional courses of antibiotics that pose a risk of producing antibiotic resistance.

4. Diagnosis and Treatment Planning

a. Oral Radiographs

"Accurate diagnostic information forms the foundation of any treatment plan.[13] This information comes from the patient history, ***radiographs***, and the clinical examination." [Information Gathering and Diagnosis Development [("Stefanac") at 3 (emphasis added)].[14] Radiographs are an important adjunct in the diagnosis of dental conditions. While visualizing the teeth is the beginning of a caries examination, radiographs "provide informative images of the teeth and jaws, and serve to document the patient's dental condition at the beginning of treatment." [*Id.* at 16].

The identification of dental caries requires an inspection of the portions of the teeth that are visible and a radiographic examination to view the portions of teeth that are not visible. Figure 1 (*supra*) illustrates the progression of decay in the areas between the teeth that can only be viewed radiographically. These lesions will not be seen until they progress to the point that tooth structure has been destroyed so that the damage can be seen on a visual examination. By this time what was likely an early lesion amenable to conservative treatment will be more difficult to restore, if it can be restored at all. Often, the decay will have advanced to the point that the tooth cannot be treated with a standard filling but may require a crown and endodontic (root canal) treatment – procedures that are generally not performed in a correctional environment[15]. Consequently, the only alternative left to the inmate is extraction. The result is preventable pain and increased tooth morbidity and tooth loss.

The radiographs most frequently used in dentistry are the panoramic (often referred to as a Panorex), periapical, and bite-wing. The panoramic radiograph (Fig. 3) displays a wide area of the jaws and helps detect developmental anomalies, pathologic lesions of the teeth and jaws, or other bone fractures[16]. In adults, dentists most commonly use this radiograph to evaluate third

[13] Radiographs or images of diagnostic quality should be obtained [as part of a comprehensive oral evaluation]. The number and type of radiographs or images required to provide the information needed for diagnostic purposes will vary according to the needs of the individual patient and should be determined by the attending dentist [American Dental Association – Evaluation: Patient Requiring a Comprehensive Oral Evaluation].

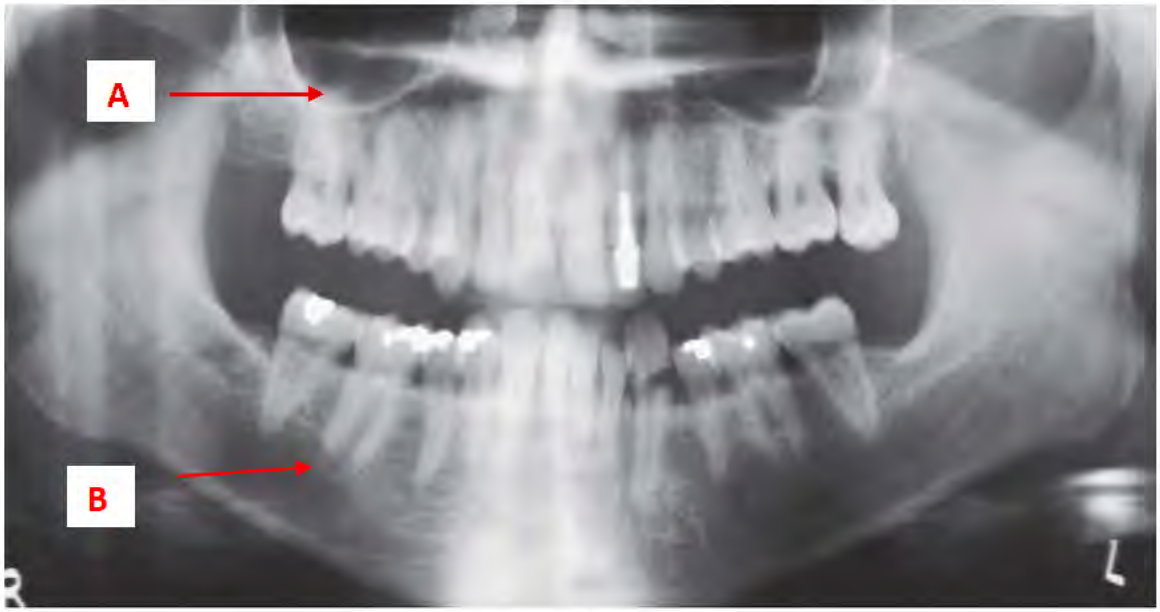
[14] For example, a treatment planning examination in the Federal Bureau of Prisons includes, *inter alia*, a complete periodontal examination and necessary radiographs (less than one year for bitewing and periapical x-rays, less than five years for panoramic x-rays) [BoP Dental Program Statement at 11].

[15] Endodontic treatment is among the required elements of the ADOC contract and the Corizon dental program [Dunn(Corizon)_10177].

[16] This is why it is important to have a panoramic radiograph exposed as part of the intake process. Pathologies such as large dentoalveolar abscesses, tumors of the jaws, and retained root tips can be identified and treatment can be scheduled as appropriate.

molar position or the condition of edentulous areas of the jaws before fabricating removable prosthodontics (dentures) [Stefanac at 17]. It is generally taken as part of the intake process (for new patients) in institutional settings such as the military, community health centers, and departments of corrections[17] as well as in many private practices.

Figure 3. Panoramic Radiograph



Panoramic radiographs display a wide area of the jaws, displaying structures not covered by periapical or bite-wing images. In adults, dentists most commonly use this radiograph to evaluate third molar position or the condition of edentulous areas of the jaws before fabricating removable prosthodontics or placing implants. Because of the lower resolution and superimposition of structures on the film, a panoramic radiograph does not have the fine detail necessary to diagnose caries or document periodontal bone loss. This is more effectively accomplished with intra-oral radiographs [Stefanac at 17].

Dentists rely on intra-oral (film or sensor placed inside the mouth) and extra-oral radiographs in their practice. The intra-oral radiographs comprise periapicals (Figure 4) and bite-wings (Figure 5). Periapical radiographs should show all of a particular tooth and the surrounding bone. They are useful for imaging the teeth, detecting caries, and documenting signs

[17] For example, it is part of the intake process in the California Department of Corrections and Rehabilitation (*See* California Department of Corrections, Division of Correctional Health Care Services. Policies and Procedures Dental Policies and Procedures, Chapter 2.2 at IV A2a that to take a panoramic radiograph at intake unless one was taken within 12 months), the Ohio Department of Correction and Rehabilitation (*see* Ohio Department of Rehabilitation and Corrections Intake Exam Protocol F-6 at IV(B)2) requiring that a panoramic radiograph be taken within 14 days), the Arizona Department of Corrections (*see* Arizona Policy and Procedure 770.1,¶3.2 at 27 that requires either a panoramic radiograph or a full mouth series be taken within 30 days of arrival).

of periodontal and periapical disease [*Id.*]. They are especially valuable when a patient presents with a toothache to determine whether the source of the pain was an adjacent tooth or whether there is an abscess associated with the root of the tooth (Figure 4).

Figure 4. Periapical Radiograph

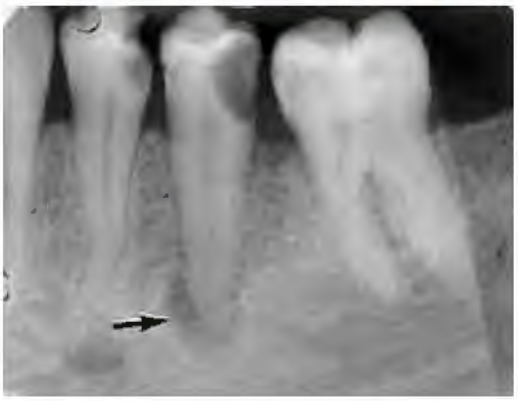
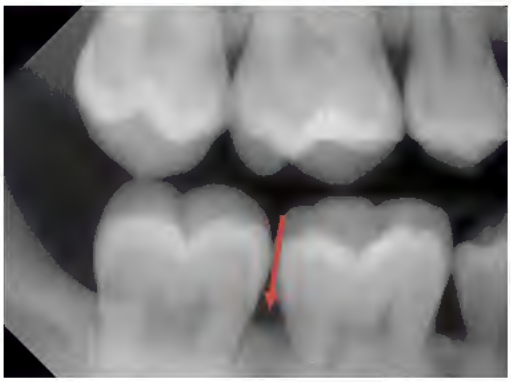


Figure 5. Bite-Wing Radiograph



Horizontal and vertical interproximal or bite-wing radiographs show the crowns of the teeth in both arches and the alveolar crestal bone[18]. They are most frequently used for the detection of interproximal caries (caries between the teeth) and for evaluating the crestal bone height to assess periodontal health (Figure 5. Bite-Wing Radiograph).

The American Dental Association and U.S. Food and Drug Administration recommendations for prescribing dental radiographs for adults are based on encounter type (new patient versus recall patient) and caries / periodontal disease history. In a prison, new intakes (other than intra-system transfers and recent recommits) fall into the "new patient" category. An examination for a new dentate or partially edentulous patient (*i.e.*, intake exam) comprises an

> [i]ndividualized radiographic exam consisting of posterior bitewings with panoramic exam or posterior bitewings and selected periapical images. A full mouth intraoral radiographic exam is preferred when the patient has clinical evidence of generalized oral disease or a history of extensive dental treatment.

[Dental Radiographic Examinations: Recommendations for Patient Selection and Limited Radiation Exposure ("Radiographic Examination") at 10 (included in the CDAA Dental Resources Binder at Dunn(Corizon)_10255-283)].

At recall (*e.g.*, annual) examinations, dentate or partially edentulous patients with clinical caries of are at increased risk for caries should have "[p]osterior bitewing exam at 6-18 month intervals" [*id.* at 11] and those with no caries and for those not at increased risk of caries[19] "a

[18] The bone between the teeth (note red arrow in Figure 5).

[19] Adult dentate patients who receive regularly scheduled professional care and are free of signs and symptoms of oral disease are at a low risk for dental caries. Nevertheless, consideration should be given to the fact that caries risk can vary over time as risk factors change [Radiographic Examination at 9]. For example, medications commonly prescribed to prisoners often cause dry mouth – which is a risk factor for caries. (*See*, discussion of dry mouth at ¶ I B(1), *supra*).

radiographic examination consisting of posterior bitewings is recommended at intervals of 24 to 36 months." [*Id*. at 12].

The use of radiographs is addressed by the National Commission on Correctional Health Care ("NCCHC") ("[r]adiographs are appropriately used in the development of the treatment plan" [Standards for Health Services in Prisons, 2008 ("NCCHC 2008") at 70 (included in the CDAA Dental Resources Binder at Dunn(Corizon)_10216); Standards for Health Services in Prisons, 2014 ("NCCHC 2014") at 81 and the American Correctional Association ("X-rays for diagnostic purposes should be available, if deemed necessary" ACA Standards Supplement, 2012 ("ACA 2012") at 74.)]. "Treatment plans should use current X-rays (6 months to 1 year) and include a full mouth series or panoramic X-ray when indicated. To develop a restorative treatment plan, the treating dentist should have appropriate bite-wing radiographs […]" [NCCHC Guidelines at 170 (included in the CDAA Dental Resources Binder at Dunn(Corizon)_10222)].

To summarize, a treatment plan that is made without clinically-appropriate radiographs is below accepted professional standards. A policy or practice of delaying the use of radiographs until the time of treatment ignores dental problems that are asymptomatic or cannot be visualized. The resulting underdiagnosis is pernicious since it will delay the treatment of dental problems and allow them to advance to the point that they are visible or cause pain. At this point treatment may be more difficult or the tooth may be unrestorable and require extraction.

b. Diagnosis of Periodontal Disease

Early diagnosis of periodontal disease is important since the disease is often painless and the prevalence of moderate to severe periodontal disease in correctional populations is high [Makrides *et al.* at 560; Dental Health Status, Unmet Needs, and Utilization of Services in a Cohort of Adult Felons at Admission and After Three Years' Incarceration ("Clare 2002") at 95] and often not associated with pain [Makrides *et al.* at 560]. If left untreated, the disease could progress and the affected dentition may be lost.[20]

The diagnosis of periodontal disease is best done during the intake examination and can be quickly accomplished by periodontal probing [Makrides *et al.* at 560]. The Federal Bureau of Prisons uses the Community Periodontal Index of Treatment Needs ("CPITN") [BOP Dental Program Statement at 10-12] and most private practices, the military[21] and many departments of corrections[22] use Periodontal Screening and Recording ("PSR").[23] "Periodontal Screening and Recording is a rapid method of screening patients to decide if a more comprehensive assessment

[20] Untreated periodontal disease can lead to the loss of teeth and possibly lead to infections. [King Dep. 99:1-6]. Moreover, "[i]f an untreated infection were to spread, it could enter the fascial planes and affect the heart" [*Id*. 99:7-14].

[21] *See* for example, Appendix F, of the U.S. Army TB Med 250 (included in the CDAA Resources Binder at Dunn(Corizon)_10193-10194).

[22] The systems with which I am familiar that have emerged from or are subject to monitoring as the result of §1983 class action litigation: California (Policy at 2.3-2, 2.3-3, 2.4-1); Ohio (Protocol F-6 at 2-3); Wisconsin (Policy #500.40.03 at 9, 18) and Arizona (Procedure 770.3 - Dental Charting; ¶4.2.2 at 30), all use the PSR, and have done so for many years.

[23] The PSR is a subset of the CPITN. Both the CPITN and PSR serve for early detection of periodontitis [Cappelli and Shulman at 21].

is necessary." [Periodontal Screening and Recording at 1 (included in the CDAA Dental Resources Binder at Dunn(Corizon)_10183)]. The PSR has been endorsed by the ADA and the American Academy of Periodontology ("AAP") [Parameter on Comprehensive Periodontal Examination ("Periodontal Exam") at 847].

Early diagnosis and treatment of periodontal disease[24] are important since the prevalence of moderate to severe periodontal disease in correctional populations is higher than that in the free population [Makrides *et al.* at 566; Clare 2002 at 95] and often not associated with pain[25] [Makrides *et al.* at 560]. Performing a comprehensive periodontal evaluation that includes a periodontal charting is a standard for dental hygiene [Standards for Clinical Dental Hygiene Practice at 7] and dental practice [Periodontal Exam at 847-848].[26]

The NCCHC recommends that

> [a] periodontal evaluation, ***such as*** a periodontal screening and recording (PSR), should be part of all comprehensive dental examinations. PSR is done at the treatment planning appointment, with results recorded on the designated form. At a minimum, noninvasive [non-surgical] periodontal care such as scaling and root planning [*sic*] should be available to inmates and is to be used where periodontal pockets exceed 3 millimeters. It should be stressed to the patient that the first step of any definitive dental treatment is the practice of adequate daily oral hygiene.

[NCCHC Guidelines at 171 (emphasis added) (included in the CDAA Dental Resources Binder at Dunn(Corizon)_10223)].[27]

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[24] Incarcerated populations present with more decay and missing teeth, and more periodontal disease, than do non-prison populations [Makrides *et al.* at 556].

[25] Typically, pain comes in later stages (after irreversible damage has been done) in the form of a periodontal abscess.

[26] *See also* Cappelli and Shulman at 21, ("[r]adiographic evidence of bone loss remains the most valid measure of destructive periodontal disease").

[27] *N.B.*: The point here is not that the PSR is ***the*** standard of care but rather a periodontal evaluation that employs periodontal probing ***such as*** the PSR is the standard of care. Dr. King testified that periodontal screening is not consistent with the standard of care applicable to dentists because "the American Dental Association says it is not" [King Dep. 91:3-92:11]. When asked to support his statement of the ADA's position, he referred the questioner to the ADA website [*Id.*]. However, the description of the PSR ***on the American Dental Association website*** (included in the CDAA Dental Resources Binder at Dunn(Corizon)_10181-182) describes the benefits of the PSR, as early [periodontal] disease detection and states that it is designed to be part of the regular oral exam [Dunn(Corizon)_10181]. Despite Dr. King's asserting that the PSR is not part of the standard of care of dentistry, he nonetheless incorporated it into CDAA's dental program because "[i]t would – I thought it would be a good idea to add" [King Dep. 92:12-20].

Finally, the position of the ADA Division of Legal Affairs is that "while ADA positions and recommendations may be cited as evidence of the standard of care, the ADA does not actually set the standard. Indeed, the ADA's patient care information, including our dental parameters, are always clear that treatment recommendations are always and ultimately left to the professional judgment of the dentist" [The Standard of Care in Dentistry ("Graskemper") at

In addition to periodontal probing, intra-oral radiographs can assist in periodontal diagnosis [Stefanc at 12]. "Intra-oral radiographs, such as vertical films and horizontal and vertical bitewings, provide a considerable amount of information about the periodontium that cannot be obtained by any other non-invasive means. Although ***valid periodontal diagnoses cannot be made from radiographs alone***, they are an essential component of a complete periodontal examination" [*Id*. (emphasis added)].

In addition to reviewing current radiographs, [Periodontal Exam at 847], NCCHC guidelines for an oral examination state that the dentist should review, *inter alia*, "periodontal screening […] [NCCHC Guidelines at 168] and "[a] periodontal evaluation, such as PSR should be part of all comprehensive dental examinations. PSR is done at the treatment planning appointment with the results recorded on the designated form […]) [*Id*. at 171 (included in the CDAA Dental Resources Binder at Dunn(Corizon)_10223)].

Periodontal probing is not a sterile academic exercise but rather a tool to identify portions of the mouth that require further examination, and it should be performed at every routine examination to monitor disease progression and determine if a more extensive examination should be performed [Periodontal Exam at 847; Parameter on Periodontal Maintenance ("Periodontal Maintenance") at 853; Parameter on Chronic Periodontitis with Advanced Loss of Periodontal Support ("Advanced Periodontitis") at 857; Parameter on Chronic Periodontitis with Slight to Moderate Loss of Periodontal Support ("Moderate Periodontitis") at 854].

To summarize, treatment plans that are not informed by periodontal probing are below accepted professional standards because they will likely underdiagnose periodontal disease. This is especially problematic since periodontal disease is typically painless. Failure to diagnose dental conditions timely is likely to result in preventable pain, tooth morbidity and tooth mortality.

5. Treatment of Periodontal Disease

While surgical treatment of periodontal disease is beyond the level of services available in correctional institutions, scaling and root planing ("SRP")[28] is well within the scope of practice of dentists and dental hygienists[29] and comprises the standard of care for nonsurgical periodontal therapy [Nonsurgical treatment of periodontitis at 77].[30] Similarly, the purpose of the debridement procedure[31] is to remove gross accumulations of materials that interfere with a

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1454]. This is a far cry from Dr. King's conclusory (and erroneous) attribution to the ADA that periodontal screening is not consistent with the standard of care.

[28] The procedure is called "Deep Scale" in ADOC [Dunn(Corizon)_10630].

[29] "At a minimum, noninvasive periodontal care such as scaling and root planning [*sic*] should be available to inmates and is to be used where periodontal pockets exceed 3 millimeters." [NCCHC Guidelines at 171 (included in the CDAA Dental Resources Binder Dunn(Corizon)_102223)].

[30] This is particularly important since one study of prisoners found 41.5% had at least one PSR score of 3 and 30.9 percent had at least one PSR score of 4 [Survey, Comparison, and Analysis of Caries, Periodontal Pocket Depth, and Urgent Treatment Needs in a Sample of Adult Felon Admissions, 1996 at 70].

[31] American Dental Association Current Dental Terminology ("CDT") Code 04355.

dentist's performing a proper exam of the teeth. It is at best a precursor to definitive periodontal treatment [Systematic Review and Meta-Analysis on the Nonsurgical Treatment of Chronic Periodontitis by Scaling and Root Planing with or without Adjuncts at 9-10].[32] The advanced lesion, once formed, can progress and the associated bone destruction may result in tooth loss [Cappelli and Shulman at 18].

Mild gingival inflammation evidenced by slight bleeding on probing (PSR Score of 1) can generally be addressed by oral hygiene instruction and a prophylaxis. As periodontal disease progresses, PSR scores increase, *pari passu*, and starting at PSR Score 3, prophylaxis and oral hygiene instruction are insufficient[33] [Moderate Periodontitis at 854; Advanced Periodontitis at 857]. Typical non-surgical treatment of individuals identified with moderate or severe periodontal disease is SRP [34] followed by periodic re-evaluation.

Sextants with PSR scores of 3 or 4 are often described as having moderate and severe periodontal disease, respectively. The Guidelines for Patient Management taken from CDAA training material on PSR codes suggest that patients with a score of 2 receive subgingival plaque removal (*i.e.*, an oral or dental prophylaxis, or 'prophy'); those with a score of 3 receive a comprehensive periodontal examination and charting of the affected sextant to determine an appropriate care plan; and those with a score of 4 receive a comprehensive full mouth charting [Periodontal Screening and Recording at 6 (included in the CDAA Resources Binder at Dunn(Corizon)_10188)].

Typically, SRP requires several visits; and, since it involves smoothing (or planing) the roots of vital teeth and often results in the removal of soft tissue, local or topical anesthesia are generally used – since it is extremely difficult to perform this procedure on a squirming patient with acceptable results.[35] It simply cannot be done in the time allocated for a dental prophylaxis.

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[32] Oral hygiene instruction (01330), while important to provide a patient with information on how to remove plaque (*e.g.*, by proper brushing and flossing), cannot remove calculus. Absent other periodontal procedures, disease may progress to the point that alveolar bone and periodontal ligament are lost, resulting in the formation of periodontal pockets (Figure 2 *supra*).

[33] Periodontal lesions may be generalized, or localized in a quadrant or a tooth.

[34] CDT Code 4342 (periodontal scaling and root planing - one to three teeth per quadrant) involves instrumentation of the crown and root surfaces of the teeth to remove plaque and calculus from these surfaces. It is indicated for patients with periodontal disease and is therapeutic, not prophylactic, in nature. Root planing is the definitive procedure designed for the removal of cementum and dentin that is rough and/or permeated by calculus or contaminated with toxins or microorganisms. This procedure may be used as a definitive treatment in some stages of periodontal disease and/or as a part of pre-surgical procedures in others (Excerpted from CDT 2015 of the ADA).

[35] "Periodontal scaling and root planing is a technically demanding and time consuming procedure involving instrumentation of the tooth crown and root structures. The instrumentation attempts to remove plaque and biofilm, adherent calculus deposits, and cementum that may be permeated with calculus, microorganisms and microbial toxins." [Delta Dental of Virginia Clinical Policy # 404 – Scaling and Root Planing]. Among the guidelines are, "[t]eeth to be treated must have at least 4 millimeter probing pocket depths", "[p]eriodontal scaling and root planing requires administration of local anesthesia by intramucosal injection. Topical anesthetics

To summarize, untreated, periodontal disease is likely to progress and the affected dentition may be lost. While performing a dental prophylaxis is appropriate for early periodontal disease and may be a first-step for treating moderate to advanced periodontal disease, appropriate non-surgical treatment for moderate to advanced periodontal disease is scaling and root planing – a procedure that is ***not*** a part of a dental prophylaxis.

6. Safe Extraction of Teeth

Since the roots of teeth are encased in bone and are not visible, it is the generally accepted professional standard for a dentist to consult a radiograph before attempting an extraction to assess the level of difficulty of the procedure and ensure that potential threats to patient safety are known in advance and can be planned for.

Radiographs may show extensive caries, large restorations, root-filled teeth (all of which may make tooth fracture more likely) and also demonstrate irregular shape, curvature and other abnormalities of the root not visible clinically [Extraction of Teeth, in Oral and Maxillofacial Surgery at 25]. The loss of bone due to periodontal disease or increased bone density influences ease of extraction. Furthermore, if a dentist does not know (due to a lack of a preoperative radiograph) that (for example), the roots of a maxillary molar are near the sinus (*e.g*., Figure 3, arrow A), he cannot plan a surgical strategy to minimize the likelihood of perforating the sinus or have a basis to refer the patient to an oral surgeon (who is trained deal with the consequences of a sinus perforation). Similarly, extracting a mandibular molar with roots that are close to the lingual nerve (*e.g*., Figure 3, arrow B) may result in damage to the nerve, resulting in temporary or permanent paresthesia (numbing) of the lip. Informed by a radiograph, a dentist can adjust his surgical approach or refer to an oral surgeon.

The NCCHC Oral Health Care Standard P-E-06 requires that "[e]xtractions are performed in a manner consistent with generally accepted professional standards of care and adhering to the ADA's clinical guidelines" [NCCHC 2008 at ¶9; NCCHC 2014 at ¶9; Corizon P-E-06.00, ¶9 (included in the CDAA Dental Resources Binder at Dunn(Corizon)_10216)]. Further, NCCHC Guidelines state that before a tooth is extracted, "[a] periapical or Panorex radiograph should be used to visualize root structure, anatomical landmarks, and pathology before the extraction is done [NCCHC 2008 Guidelines at 170 (included in the CDAA Dental Resources Binder at Dunn(Corizon)_10222)]. Similarly, the Federal Bureau of Prisons requires that before a tooth is extracted (*inter alia*) radiographs taken within the past year that are of diagnostic quality and show the root apices should be reviewed [BoP Dental Program Statement at 14].

Extracting a tooth without an adequate preoperative radiograph deprives dentists of the ability to (1) determine that the case is beyond their skill level or unsuitable given the equipment limitations of the clinic so the patient can be referred to an oral surgeon; (2) assess a potentially difficult procedure so they can adjust the surgical approach accordingly[36]; and (3) ensure that the

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and other anesthetic preparations injected or placed subgingivally do not qualify as local anesthesia for scaling and root planing procedures." [*Id*.].

[36] For example, knowing that molar roots are curved (as in Figure 3, *supra*), the dentist can make an incision, remove bone, and section the tooth).

necessary equipment is available. Furthermore, a pre-operative radiograph can serve as evidence of a potentially life-threatening condition.[37]

To summarize, among the potential consequences of not using a preoperative radiograph for a tooth extraction are 1) causing damage to underlying anatomic structures, 2) iatrogenic root fracture, 3) damage to adjacent teeth, and 4) overlooking an asymptomatic lesion associated with the tooth. Extracting a tooth without an adequate preoperative radiograph is, simply put, reckless clinical behavior that puts patients at a substantial risk of serious harm.

7. Treatment of Chewing Difficulty

Prisoners whose chewing difficulty is due to painful teeth should be prioritized for treatment; typically, restorations or extractions are necessary since partial dentures should not be fabricated until all other treatment (*i.e.*, extractions, restorations and periodontal) has been completed in order to ensure that the dentition is stable.[38]

Chewing difficulty due to an insufficient number of teeth should be addressed by timely fabrication of a prosthetic device. While a soft diet may be useful in the short-term, such as while the denture is being fabricated, it is not a substitute for fabricating the denture timely.

8. Staffing

Inadequate staffing is typically the reason for untimely care; consequently, a dental program should have an appropriate mix of dentists, dental hygienists[39], and dental assistants[40]. Inadequate staffing causes delay and puts inmates at a substantial risk of serious injury. Among the minimum remedial measures identified by the DOJ to rectify deficiencies found in a jail and

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[37] For example, hemangiomas are highly vascular lesions that can occur in the jaws and can be identified radiographically. While rare, they have the "potential to result in exsanguination", which usually follows an unrelated treatment of some type[37], either in the patient with a known lesion or one in whom the nature of the lesion is unknown. Fatal spontaneous hemorrhage also can occur." [Central Hemangioma of the Jaws at 1154].

[38] For example, the Federal Bureau of Prisons requires that "[a]ll RPDs [removable partial dentures] (transitional, temporary, cast, or acrylic) will be initiated **only after** periodontal, surgical, and restorative treatment is completed." [BoP Dental Program Statement at 15 (emphasis in original)].

[39] A dental hygienist has an associate or baccalaureate degree in dental hygiene. A dental hygienist's education emphasizes the basic sciences, which include microbiology, chemistry, pathology, anatomy and physiology. Dental hygienists may perform oral prophylaxis, scaling, closed subgingival curettage, and root planing, administer local anesthesia [in many states], examine the oral cavity and surrounding structures, perform a periodontal examination, record clinical findings, compile case histories, and expose and process radiographs [Shulman *et al*. at 54]. Dental hygienists are not permitted to administer local anesthesia in Alabama [States that Permit Dental Hygienists to Administer Local Anesthesia, 2012 (revised 2015) ("ADHA Local Anesthesia")].

[40] A dental assistant is a minimally trained individual with familiarity in dental physiology, dental charting, sterilization and infection control, dental x-ray techniques, instrumentation, dental materials, and preventive dentistry [Shulman *et al*. at 54].

to protect the inmates' constitutional rights was to "[e]nsure dental hours accommodate the need for dental care." [Lake County Findings Letter at 29].

Since appropriate staffing depends on many factors such as the mission of the facility, the scope of services provided, and program (and institution) efficiency, there is no 'one size fits all' staffing model. However, it is instructive to look to the correctional literature as well as correctional systems that are or have been under court supervision as a points of departure for the range of prisoner to dentist and dental hygienist ratios to place a dental program's staffing ratios in context.[41]

Makrides *et al*. recommended an inmate-to-dentist ratio for prisons of at a minimum 1,000:1 under the assumption that dental hygiene support will be provided in addition to that ratio [Makrides *et al.* at 557]. The ratio requires even more dentists per inmate if an inadequate number of dental hygienists and/or appropriately-trained staff are employed, or if dentists are tasked with performing duties that dental staff typically would perform.[42] Thus, a staffing model for a dental program in a prison must include an appropriate mix of dentists, dental hygienists, and dental assistants.[43]

9. Program Monitoring

Health care delivery systems, including prison health care systems, must have a program for evaluating the delivery of services and monitoring the quality of care for patients. The elements of such a program include the assessment or evaluation of the quality of care; identification of problems or shortcomings in the delivery of care; designing activities to overcome these deficiencies; and follow-up monitoring to ensure effectiveness of corrective

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[41] In my experience, clinics should have 1.5 dental assistant full time equivalents per dentist.

[42] For example, when a dental assistant is not available to assist the dentist chairside, a dentist is less efficient and cannot perform certain procedures (such as tooth extraction) safely. Similarly, when dental hygienists are unavailable, dentists will have to treat early and moderate periodontal disease (if it is treated at all) at the expense of other patient treatments.

[43] The stipulated injunction in a case involving the Ohio Department of Rehabilitation and Corrections required an inmate to dentist ratio of 1,200:1 and the hiring of 24 dental hygienists[43] [*Fussell v. Wilkinson* Agreement on Dental Care. Case 1:03-cv-00704-SSB Document 181-1 Filed 02/26/2007 at ¶J].

The stipulated injunction settling a case involving the California Department of Corrections and Rehabilitation initially required a ratio of 515:1 without dental hygienists. [Joint Case Management Statement Re: Staffing Changes, *Perez v. Cate*, Case3:05-cv-05241-JSW Document 535 Filed 08/05/10 at ¶ III]. The staffing ratio was subsequently modified during the course of monitoring to 600:1 and 2,000:1 for dental hygienists for all institutions that were not reception centers [*Id*. at ¶II].

The stipulated injunction settling a case involving the Arizona Department of Corrections required that "[d]ental staffing will be maintained at current contract levels – 30 dentists" [*Parsons v. Ryan* Stipulated Injunction. Case 2:12-cv-00601-DJH Doc. No. 1185-1 Filed 10/14/14 Page 8]; an inmate-to-dentist ratio of 1,178:1, based on an inmate population of 35,342 (privately run prisons were excluded from the settlement).

steps. Essential to the monitoring process is internal auditing (self-inspection) and external reviews.

According to the NCCHC, a continuous quality assurance ("CQI") program identifies health care elements to be monitored, implements and monitors corrective action when necessary, and studies the effectiveness of the corrective action plan [NCCHC 2014 at P-A-06 ¶1]. Similarly, "a system of documented internal review will be developed and implemented by the health authority" [ACA 2012 at 4-4410]. The review should include, *inter alia*, evaluating defined data, onsite monitoring of health service outcomes on a regular basis through chart reviews, review of prescribing practices, systematic investigation of complaints and grievances [*Id*.]. At the heart of CQI is the principle of self-inspection [American Public Health Association Standards for Health Services in Correctional Institutions at 153].

A peer review or clinical quality enhancement process is foundational to clinical quality assurance. Among the NCCHC compliance indicators for clinical performance enhancement program is, "[t]he responsible health authority (RHA) implements an ***independent*** review when there is serious concern about any individual's competence" [NCCHC at P-C-02 (emphasis in original)].

D. Summary

The standards set forth above are necessary to achieve ***minimally adequate*** care and are based on practices that are black letter dentistry; and have been so or more than 20 years.[44] This report explains numerous reasons why ADOC's ***systemic*** inadequacies in the delivery of dental care place inmates at a substantial risk of serious harm. I use specific inmates largely as examples of how that risk has manifested, but my opinions do not rise and fall with those examples because, based on my expertise in institutional and population-based dentistry, I am looking at the current risk to the inmates caused by the system as a whole.

II. SUMMARY OF OPINIONS

It is my opinion, to a reasonable degree of dental certainty, that the materials and records of the Plaintiffs and other prisoners I reviewed document consistently inadequate care and suggest systemic problems caused by inadequate staffing and inadequate policies and procedures in the ADOC's Dental Program. Specifically, the ADOC's policies and practices with regard to the diagnosis of caries, the diagnosis and treatment of periodontal disease, and the provision or timely routine and urgent care, combine into a system that fails to adequately identify, or properly and timely treat dental issues experienced by inmates.

ADOC's, Corizon's and CDAA's policies on these issues are in many cases themselves below the standard of care, placing all inmates at risk not only of preventable pain, but also of tooth decay and unnecessary loss of teeth due to caries and periodontal disease. Moreover, ADOC's failure to adequately monitor the care being provided by its contractor (or even to keep records that would allow adequate monitoring) means that ADOC cannot ensure that it is addressing prisoners' dental needs. These failures place all inmates at a substantial risk of serious

[44] In my career as a dental educator, my colleagues and I have taught the professional standards for diagnosis and treatment of dental caries and periodontal disease set forth in this chapter to successive cohorts of dental students.

dental injury, such as preventable pain, advanced tooth decay, and unnecessary loss of teeth. The inadequacies in dental care experienced by the Plaintiffs whose records I reviewed are typical of the risk of inadequate dental care for all inmates. Consequently, all present and future inmates with dental problems are at risk for preventable pain and tooth morbidity. In my experience as Court Expert / Monitor in *Fussell v. Wilkinson* and *Perez v. Tilton*, both large dental prisoner class actions, I have seen systemic problems of this type addressed successfully by mandated changes in the dental care system.

III. METHODOLOGY

In a study of this type, a useful methodology should focus on policies and practices of the system and the way they create risk for the prison population. Consequently, reviewing the treatment of individual prisoners is not an end, but simply a means to illuminate the issues that relate to systemic problems.

To assess the overall quality of ADOC's dental program, including the timeliness of addressing complaints of pain, identifying disease, arresting disease progress, and rehabilitating affected teeth, I reviewed dental records of the 39 Plaintiffs, as well as 181 randomly selected prisoners. In my experience evaluating correctional and institutional care, I found that interviews with prisoners regarding their dental treatment may be inaccurate or incomplete. Moreover, prisoner narratives would need to be corroborated by a record review. Consequently, I spent the limited time that I was allowed at the prisons on document and record reviews.

Similarly, I did not review x-rays[45] because I was evaluating the overall quality of the ADOC dental care system, not the quality of the care provided to any particular prisoner. Instead, I relied on the charting and treatment plans of the dentists who had an opportunity to review x-rays and examine the prisoners.

In assessing timeliness, I started the 'clock' on the date recorded by the prisoner on the Health Services Request Form ("HSRF"). If that date was not legible, I used the date the HSRF was received by the Nursing Department. I stopped the clock when the prisoner was examined by a dentist to assess the problem or, if an extraction or filling was indicated for a painful tooth, when the tooth was extracted or filled.

A. Materials Reviewed

I reviewed (1) prisoner dental charts[46] and Health Service Request Forms, (2) grievances related to dental care, (3) ADOC / Corizon / Correctional Dental Associates of Alabama ("CDAA") policies and procedures pertaining to the provision of health care to include dental care, (4) the Deposition Transcripts of Dr. Charles King dated Feb. 10, 2016 ("King Dep.") and Ruth Naglich dated Apr. 7, 2016 ("Naglich Dep.")], (5) Dental X-ray Logs from November

[45] I did, however, note their presence or absence in order to assess the extent to which x-rays might have informed the dentists' clinical decisions.

[46] I also reviewed the Nursing Section to see dental HSRFs that were not moved to the Dental Chart.

2014, (6) Daily Worksheets (or Day Sheets) [King Dep. 156:15-158:19][47], (7) Corizon Monthly Client Reports and (8) other material listed in Exhibit C.[48]

B. Record Selection

In addition to reviewing records of the Plaintiffs, I performed record audits at each prison I visited to collect sufficient data to allow me to opine about the quality of the ADC dental program.[49] Based on my experience auditing prisons, many prisoners will not have requested dental care during the period of interest[50] (2011-2016). Thus, selecting records from the entire ADOC population would be inefficient. My preference was to select records from a list of HSRFs for dental care submitted between 2011 and 2016; however, I was informed that ADOC had no such list. As a result, I used the Dental X-ray Log (¶III C(3)(b) *infra*), which documents the problem for which an x-ray was taken as well as the dentist's assessment of the tooth's prognosis.

From the Dental X-ray Log, I selected prisoners who had had x-rays taken for problems related to urgent care (*i.e.*, pain, swelling, broken teeth, lost fillings, decay, and teeth or root tips that should be extracted). My experience in correctional and institutional care has taught me that timely addressing pain and other urgent care problems is an excellent measure of the responsiveness of a dental care system and the level of compliance with (and adequacy of) policies and procedures.[51] After selecting a record from the Dental X-ray Log, I examined the timeliness of the appointment for pain and reconstructed the prisoner's dental history during the period of interest. Many of the selected records had HSRFs requesting both routine care and treatment for pain. In such cases, I would ascertain the extent to which problems that generated a request for urgent care were related to routine care that had been substantially delayed.

[47] I reviewed the Day Sheets during my prison visits and took notes as time permitted.

[48] Numerous documents in this case were only recently produced, and the supplementation and provision of other documents remains in dispute. Additional documents may still be produced, and I reserve the right to supplement my opinions as necessary based on documents produced after completing this report.

[49] I visited eight prisons: Bibb Correctional Facility ("Bibb"), Bullock Correctional Facility ("Bullock"), Donaldson Correctional Facility ("Donaldson"), Holman Correctional Facility ("Holman"), Kilby Correctional Facility ("Kilby"), St. Clair Correctional Facility ("St. Clair"), Staton Correctional Facility ("Staton"), and Tutwiler Prison for Women ("Tutwiler"). The complete list of patients whose dental records I reviewed is in Exhibit C. The list of patient names is marked "for attorneys' eyes only," and should be treated as such.

[50] Among the reasons adults forgo dental care are 1) cost, 2) low perceived need, and 3) dental anxiety [Why Adults Forgo Dental Care at 5]. While a co-pay of $4 is small by free world standards, it may represent a large proportion of a prisoner's financial resources.

[51] Selecting dental records of inmates complaining of pain or swelling is the most effective way to understand whether the inmates who require urgent dental care actually receive it.

I reviewed the dental charts of the 39 Plaintiffs and the charts of other prisoners.[52] I selected charts primarily from the Dental X-ray Log[53] that records the name, AIS number[54], date of x-ray, teeth x-rayed, reason for the x-ray, and the dentist's clinical impression. Since many of the x-rays were taken on prisoners with toothaches, I was able to determine from comparing the date of the HSRFs to the date of treatment in the progress notes to determine how long it took for the prisoner to be seen (1) by nurses, (2) by a dentist, and (3) if the dental visit resolved the prisoner's dental problem. Furthermore, by looking back in the record to previous HSRFs and dental progress notes, I was able to assess the timeliness of urgent care (*i.e.* toothaches) and routine care (*i.e.* examinations, fillings, and dentures).

I also selected records from prisoners who received dental treatment whose names were recorded in the Day Sheet[55] that lists all the dental procedures performed on each prisoner. The Day Sheet also provided me with a clear picture of the dental treatment provided to all a facility's prisoners.

I explicitly assume that the health record I reviewed reflects all the prisoners' dental treatment, clinical findings, treatment plans, and treatment requests for the period of interest. Since I reviewed the health record and did not examine any prisoners, I accept the examining dentists' clinical findings and diagnoses and opine based on the material I reviewed and 45 years of experience in institutional dentistry.

C. Record Review[56]

1. Examinations and Treatment Plans

To assess the adequacy of the examinations and treatment plans, I reviewed the Dental Treatment Plan and Treatment Record that identifies the problems found at the examination and prioritized treatment recommended by the dentist. When treatment is provided, it is noted on the form.

My review focused on whether the examining dentist had sufficient clinical information to make an informed diagnosis and treatment decision. Specifically, (1) whether there were sufficient recent radiographs available to identify caries and periodontal disease, (2) whether periodontal probing was performed in the assessment of the prisoners' periodontal health, and (3) whether the treatment plan reflected the clinical findings. For example, if periodontal disease (*i.e.*, gingivitis, chronic periodontitis, or aggressive periodontitis) had been diagnosed, was treatment for those conditions planned?

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[52] Unlike the Plaintiffs' health records that were provided by Plaintiffs' counsel, my review of the other prisoners' records was performed on-site. In addition, I was provided with records of prisoners who were requested by other Plaintiffs' experts.

[53] See, CDAA Radiographic Policy; effective 10/21/2014 [Dunn(Corizon)_10253-Dunn(Corizon)_10254]. An example of the Dental X-ray Log is at Figure 7, *infra*.

[54] Alabama Institutional Serial Number.

[55] The form does not have a title and I have heard it referred to as Daily Worksheet, Daily Treatment Log, Day Sheet, and Room Sheet.

[56] I focused on requests for dental care and dental treatment provided from 2011.

Since I was evaluating the overall quality of the ADOC dental program (as typified by the treatment of the prisoners whose charts I reviewed), not the quality of the care provided to any particular prisoner, I relied on the charting and treatment plans of the dentists who had an opportunity to examine the prisoners. Thus, if a dentist charted a tooth to be filled, I presumed that a filling was appropriate treatment. Similarly, I assumed that a tooth charted for extraction should be extracted. On the other hand, I noted when clinical decisions were made based on insufficient information.

2. Corizon Reports

Corizon summarizes dental program data in its Monthly Client Report for the ADOC. Among the dental care utilization metrics reported are the number of intake dental screens, 30-day intake exams, dentist and dental hygienist encounters, extractions, fillings, dental x-rays, off-site dental care, refusals, prosthetics initiated, and prosthetics completed. The September report provides an annual roll-up (October to September).[57]

3. Dental Clinic Reports

While reviewing a prisoner's dental record provides an in-depth look into one individual's treatment, I was provided with reports that provide an excellent view of institutional practice; specifically, the Dental X-ray Logs and the Daily Worksheets (or Day Sheet).

a. Day Sheets

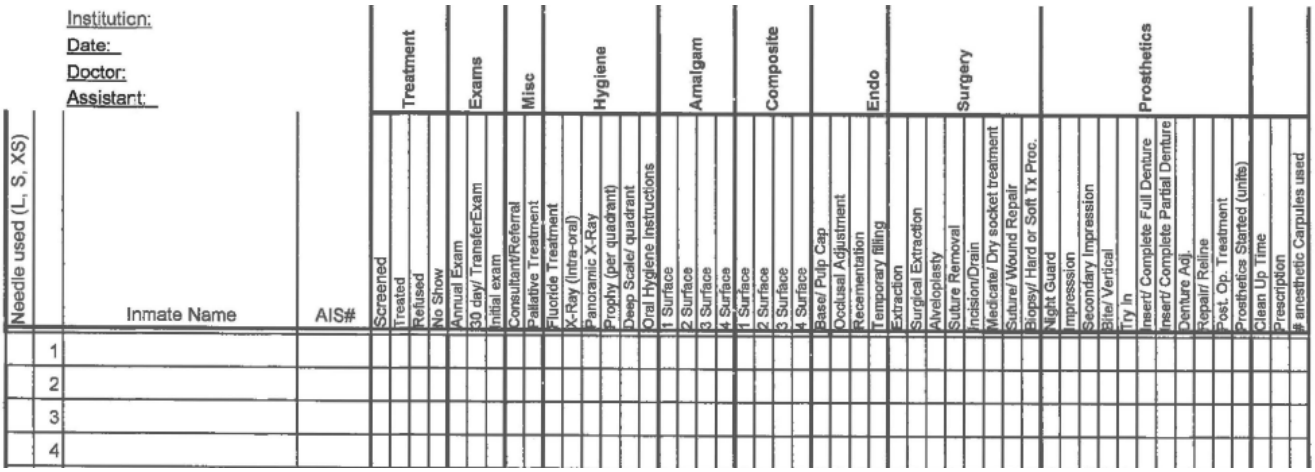
Dr. King testified that dental staff records the name and AIS number of each patient, as well as the procedures that were performed on them on a Day Sheet which remains in the dental clinic or is turned in to the Health Services Administrator or Director of Nursing [King Dep. 156:15-158:19]. [58,59] Figure 6 is a portion of a sample Day Sheet.

[57] The September 2014 report is the most recent report provided with an annual rollup.

[58] The Day Sheets are the source of the Dental Care data presented in the Corizon Monthly Client reports. The Dental Care section comprises the number of Intake Dental Screens, 30-Day Intake Dental Exams, Dentist and Dental Hygienist Encounters, Extractions, Fillings, Dental X-rays, Off-site Dental Care, Refusals, Prosthetics Initiated, and Prosthetics Completed.

[59] With the exception of the Day Sheets from St. Clair (which were printed and could be scanned), the Day Sheets are hand-written and cannot (without massive effort) be analyzed.

Figure 6. Sample Day Sheet



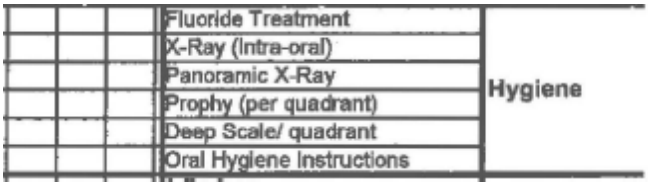
Institution:
Date:
Doctor:
Assistant:

Needle used (L, S, XS)		Inmate Name	AIS#	Treatment: Screened	Treated	Refused	No Show	Exams: Annual Exam	30 day/ Transfer Exam	Initial exam	Misc: Consultant/Referral	Palative Treatment	Hygiene: Fluoride Treatment	X-Ray (Intra-oral)	Panoramic X-Ray	Prophy (per quadrant)	Deep Scale/ quadrant	Oral Hygiene Instructions	Amalgam: 1 Surface	2 Surface	3 Surface	4 Surface	Composite: 1 Surface	2 Surface	3 Surface	4 Surface	Endo: Base/ Pulp Cap	Occlusal Adjustment	Recementation	Temporary filling	Surgery: Extraction	Surgical Extraction	Alveoplasty	Suture Removal	Incision/Drain	Medicate/ Dry socket treatment	Suture/ Wound Repair	Biopsy/ Hard or Soft Tx Proc.	Prosthetics: Night Guard	Impression	Secondary Impression	Bite/ Vertical	Try In	Insert/ Complete Full Denture	Insert/ Complete Partial Denture	Denture Adj.	Repair/ Reline	Post. Op. Treatment	Prosthetics Started (units)	Clean Up Time	Prescription	# anesthetic Carpules used
	1																																																	
	2																																																		
	3																																																	
	4																																																	

The Hygiene Section (Fig. 6a) comprises fluoride treatments, x-rays, "prophy (per quadrant[60])", "deep scale (per quadrant)", and oral hygiene instructions. It is notable that while there is a category for "Panoramic X-ray" and "X-ray (intra-oral), there is not a specific category for bite-wing x-rays; so, bite-wing and periapical x-rays are conflated.

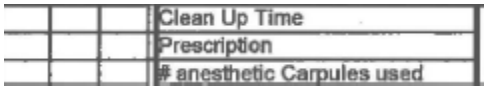
Figure 6b shows the "Uncategorized Procedures". Particularly noteworthy is "# anesthetic Carpules used" since it indicates if a prisoner received local anesthetic for the procedures that were documented.[61]

Figure 6a. Hygiene Procedures from Day Sheet



			Fluoride Treatment	Hygiene
			X-Ray (Intra-oral)	
			Panoramic X-Ray	
			Prophy (per quadrant)	
			Deep Scale/ quadrant	
			Oral Hygiene Instructions	

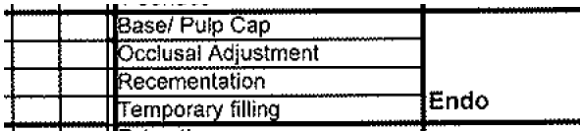
Figure 6b. Uncategorized Procedures from Day Sheet



			Clean Up Time
			Prescription
			# anesthetic Carpules used

Figure 6c shows the procedures classified as "Endo [Endodontic]". The significance of the absence of a category for "root canal" or "endodontic treatment" will be discussed in the Routine Care and Monitoring sections, *infra*.

Figure 6c. Endodontic Procedures



		Base/ Pulp Cap	Endo
		Occlusal Adjustment	
		Recementation	
		Temporary filling	

[60] A prophy performed on the entire mouth would represent four quadrants.

[61] This is particularly salient for my discussion of the performance of the Deep Scale procedure in ¶IV E(3), *infra*.

b. Dental X-ray Logs

The Dental X-ray Log was introduced 10/12/2014 in the CDAA Radiographic Policy [Dunn(Corizon)_10253-0254][62]. It records the prisoner's name, AIS number, date, teeth x-rayed, the reason for the x-ray, and the dentist's impression of the x-ray.[63]

Figure 7. Dental X-ray Log

DENTAL X-RAY LOG

Name	AIS#	Date of X-ray	Tooth/Teeth x-rayed	Reason for X-Ray	Impression

D. Limitations of Methodology

My review of the Plaintiffs' dental charts did not include interpretation of any radiographs that might have been in the chart because my interest was not in attempting to second-guess the dentist's diagnosis but rather to determine whether current radiographs were available to dentists when they made clinical decisions.[64] For Plaintiffs' records (reviewed in pdf format), I inferred the existence of radiographs from clinical entries[65] and the presence of informed consent to take ***specific*** radiographs.[66] While the Dental X-ray Log does not document x-rays taken before 10/21/2014, I was able to review the past treatment of all the prisoners whose records I selected for review.[67]

[62] "A log of all radiographs made has been developed and a copy is attached to this Policy. For more details on the ADA Guidelines, see your Resources Book." [CDAA Radiographic Policy as of 10/10/2014 (Dunn(Corizon)_10253)].

[63] Since the CDAA Radiographic Policy did not set forth standard categories for "reason for x-ray" and "impression", there is little consistency between or ***within*** facilities making analysis problematic at best. However, there appears to be consistency in identifying the teeth (that is tooth numbers) that were x-rayed and whether the tooth was diagnosed as being restorable.

[64] For example, what (if any) radiographs were available to the dentist who made a treatment plan or extracted a tooth.

[65] It is a professional standard to document any radiographs taken in the dental progress notes.

[66] A valid consent form must specify the tooth to be x-rayed.

[67] The only X-ray Logs provided for my review were from March through June, 2015. Consequently, I assume that they are representative of the x-ray logs that were not provided.

IV. FINDINGS

A. Organization of the Dental Program

Dental care is provided to ADOC prisoners by CDAA, a subcontractor of Corizon [Dunn(Corizon)_10174]. The President of CDAA, Dr. Charles M. King, also serves as the Corizon Regional Dental Director [Dunn(Corizon)_10175]. Dental treatment is governed by Corizon and CDAA Policies and Procedures[68]. All dentists and dental hygienists are employed by CDAA and dental assistants are selected by CDAA and employed by Corizon [Dunn(Corizon)_10178].

B. Policies and Procedures

In my opinion, based on a reasonable degree of dental certainty, the policies and procedures of Corizon and CDAA are inadequate to provide acceptable dental care to ADOC prisoners. Moreover, Corizon Oral Care Policy omits critical requirements of the ADOC contract, as do CDAA policies and practices. The minimal ADOC contract requirements and the inadequate policies and procedures of Corizon and CDAA redound to the detriment of the prisoners and pose a substantial risk of preventable pain, tooth morbidity and mortality.

1. Contract Requirements:

The requirements for the dental program are set forth in ¶5.26 (A) of the ADOC Request for Proposal ("RFP").

a. Sick Call.

Sick call triage will be conducted in accordance with ACA and NCCHC standards[69] [ADOC000621]. Health complaints from inmates residing in a secured facility with daily nursing service, must be reviewed and triaged within twenty-four (24) hours of a sick call request being submitted by the inmate. The sick call nurse will evaluate inmates presenting themselves for assessment, in accordance with the ADOC approved sick call protocol [*Id.*]. "All triage activity must be under the supervision and/or review of a registered nurse." [*Id.*].

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[68] The relevant policies, along with related materials, are collected in the CDAA Dental Resources Binder present at each dental clinic. "The Binder contains not only methods and materials, contract excerpts, the Alabama Dental Practice Act and Board Rules, some Standard Operating Procedures (SOPs), but also Code of Federal Regulations excepts, National Commission on Correctional Health Care (NCCHC) standards excerpts, and other reference materials that may be of some use in the clinical practice of dentistry in the correctional setting." [Dunn(Corizon)_10174]. Since the material is cited approvingly and it is used for training his personnel, I take it that Dr. King sees these materials as being authoritative and reflect accepted professional standards.

[69] Inmate requests "are documented and reviewed for immediacy of need and the intervention required. Qualified health professionals *respond to health services requests* and conduct clinicians' clinics on a timely basis and in a clinical setting." [NCCHC 2014 P-E-07 at 83 (emphasis in original)]. Furthermore, "it is recommended that qualified health care professionals with the most experience triage and assess inmate health care requests" [*Id.* at 84].

b. Routine Care[70]

Routine care will be provided within fourteen (14) days of an inmate's request for treatment. Treatment will be based upon assessed needs will include, but not be limited to, the following: annual dental screenings, dental cleanings[71], restorative treatment (fillings), endodontics (root canal treatments), periodontal screening, evaluation, and limited early treatment, and patient Education with nutritional/dietary counseling [ADOC000634]. Similarly, Corizon states that dental treatment is based "upon assessed needs and will include, but will not be limited to, the following: Prophylactic, Oral Hygiene; Restorative; Endodontics; Periodontal screening, evaluation; and limited early treatment; Routine and simple surgical extractions; Prosthetics; and, Patient Education with nutritional/dietary counseling" [Dunn(Corizon)_10177].

c. Oral Surgery Services

The vendor is responsible for contract arrangements and budgeting for oral surgery services [ADOC000634]. While most extractions are within the skill level of a general practitioner, a small proportion should be referred to an oral surgeon [*Id*.].

d. Summary

The requirements of the contract are minimal and omit several critical areas. Furthermore, many of the contract requirements are difficult, if not impossible, to evaluate since they are not written in terms sufficiently specific to be audited.

2. ADOC Policies and Procedures

The ADOC Office of Health Services ("OHS") is responsible for the management, implementation, and oversight of the health services, care, treatment, and programs provided for the inmates assigned to the custody of the ADOC [Administrative Regulation 700 (ADOC000779]. Among the responsibilities of the Associate Commissioner of the OHS are monitoring the provision of health care to ADOC inmates, providing direction and oversight to the health services vendors, and directing and supervising the ADOC Contracted Medical Director [*Id*. at ADOC000781].

The OHS monitors / audits the health services provided by its vendors based on contract specifications and clinical criteria as established by the NCCHC "Standards for Prison"[72]. Clinical and Administrative services are, at a minimum, monitored by the review of medical records, administrative logs, rosters and forms and are performed by "ADOC-OHS state employees who are correctional health administrators, registered nurses and/or licensed physicians."[73] [OHS Policy: Medical Services – Systems Audits at ADOC000807].

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[70] Inmates are required to have routine as well as urgent/emergent dental services. While routine care must be provided within 14 days of request, no maximum waiting time is set forth for urgent care.

[71] Dental cleanings [oral / dental prophylaxis] will be offered once yearly to those inmates who are: diabetic, taking Dilantin, or taking calcium channel blockers. Special consideration for cleanings is also to be given for inmates who are immune compromised due to illness or treatments [*Id*.].

[72] More accurately, Prison Health Standards.

[73] It is noteworthy that dentists are not among the monitors.

Ruth Naglich, ADOC Associate Commissioner for Health Services, testified that ADOC does not audit Corizon against the community standard [Naglich Dep. 92:4-11] but audits "in accordance with NCCHC and ACA which sets those standards" [*Id*. 92:15-93:6]. Moreover, OHS audits do not evaluate the quality of medical care but "[t]hey audit the access, the appropriate level, the appropriate provider. These are the general things we look for." [*Id*. 95:10-96:18].

While Corizon bases its audit tool on NCCHC Oral Care Standard P-E-06, (*see,* ¶IV B(2) *infra),* the Oral Care Standard measures an institution's processes for providing care, requiring a full range of dental treatment (rather than just extractions) and a priority system to determine the need for more urgent care [*See id.* at 81-82 Compliance Indicators (Oral Care Standard (P-E-06))]. The NCCHC Oral Care Standard, however, does not require that dentists audit the care actually performed at an institution in order to evaluate health outcomes. Additionally, some NCCHC standards, such as the requirement that care be "timely," do not specify auditable standards. Thus, relying on NCCHC standards as Corizon and ADOC do, fails to demonstrate that an institution meets the appropriate standard of care. To the contrary, the shortcomings of the NCCHC standards reinforce the systemic failures within the ADOC.

The audit tool used to evaluate the dental program comprises nine measures: 1) timeliness of oral screening, 2) providing oral health education, 3) examination and treatment plan, 4) triaging dental sick call requests, 5) denture fabrication after impressions are taken; 6) documenting dental cleanings on patients with diabetes or taking certain medications; 7) whether a progress note is entered when a patient is seen; 8) documentation of weekly spore tests; and 9) documented sharps counts at the end of the clinic day [*See* for example, Holman Dental Services Audit Tool at ADOC0140398].

However, these measures address the ***process*** of providing (and documenting) dental care and not quality of the care itself (*i.e., **the outcome***). Since there are no dentists in the OHS[74] and the measures are designed for non-dentists to audit, the audit necessarily produces a report that provides a limited view of the dental programs. For example, while it is useful to know if "[a]n oral examination and treatment plan [was] developed by dentist within 30 days of incarceration" (Measure 3), determining whether the treatment plan is adequate is even more important. Similarly, while the timeliness of oral screening (within 7 days) and an intake dental examination (within 30 days) are audited, the timeliness of urgent[75] and routine[76] care – far more important elements of a dental program – are not addressed. And while Corizon may have a peer review program in place, the OHS does not have the capacity to perform its own clinical oversight

[74] On information and belief, while the OHS contracts with outside physicians, it does not contract with outside dental experts for program monitoring. For example, Ms. Naglich testified that OHS occasionally reaches out to other professionals and former monitors for assistance in auditing and in-service training [Naglich Dep 70:9-76:1]; however, there is no mention of contracting with outside dental experts for program monitoring.

[75] Question 4 ("Dental sick call request triaged within 24 hours of initial request") addresses triage – not providing definitive treatment.

[76] This is a particularly egregious failing since the ADOC contract requires that "[r]outine care will be provided within fourteen (14) days of an inmate's request for treatment." [ADOC000634].

because it has no dentist on its staff. Leaving clinical monitoring exclusively to a contractor is inviting a fox to guard the henhouse.

ADOC's lack of effective monitoring and oversight affects all areas of dental care in ADOC facilities. Without effective monitoring, ADOC has no way to confirm whether its contractor is providing adequate dental care or whether the dental program falls below the accepted professional standards. In a large institution like the ADOC, monitoring and oversight are essential due to the numerous people required to work together to provide dental care. Without monitoring, inmates are put at a substantial risk of injury because there is no one to ensure that dental care is being provided appropriately.

To illustrate this, while the ADOC requires that dental treatment be based on assessed needs and will, *inter alia*, include endodontics [Dunn(Corizon)_10177], it does not monitor Corizon to ensure that prisoners receive the scope of services in the contract. It is either ignorant of or willfully blind to CDAA's policy that essentially eliminates endodontic treatment[77].

To summarize, the ADOC dental program monitoring is a Potemkin village—designed only to impress. The oral care measures that comprise the December 17-18, 2013 Holman audit [ADOC0140398] and October 22, 2014 Easterling audit [ADOC0186177] are meaningless, ineffective and superficial since they ignore the most important aspect of the program: clinical outcomes. Moreover, the audit tool produced data so condensed and removed from clinical outcomes that it added little to my understanding of the dental program. Based on my experience evaluating and auditing dental programs in the military, educational facilities, and departments of corrections, a proper evaluation requires more and finer ***clinical*** data, as well as the motivation and expertise to perform a thorough analysis.

3. Corizon Policies and Procedures

a. Nurse Sick Call

The dental program is heavily influenced by the sick call policy since the policy establishes the nursing department as the entry point for accessing all dental care [P-E-07.00. Dunn(Corizon)_00591-00594]. The policy also specifies that the triage process requires a qualified healthcare professional[78] review each slip and schedule the patient for indicated follow-up. "Qualified nursing professionals utilize approved physician protocols for daily nurse sick call visits." [Dunn(Corizon)_00592].

Since the Nursing Service is the gatekeeper for dental sick call, it is critical that qualified health care professionals triage and manage those prisoners until a dentist can resolve the problem. "[I]n correctional settings, nurses must be able to assess teeth and gum conditions to evaluate abscesses, trauma, and cavity pain.'' [Nursing in the Primary Care Setting at 445].

[77] The Day Sheet does not have a category to record endodontic (root canal) treatment.

[78] The NCCHC defines qualified health care professionals to "include [] physicians, physician assistants, nurses, nurse practitioners, dentists, mental health professionals and others who by virtue of their education, credentials and experience are permitted by law to evaluate and care for patients." [http://www.ncchc.org/glossary-of-terms (visited 5/24/2016)]. *N.B.*: Licensed Practical Nurses and Licensed Vocational Nurses are not included in the definition of a qualified healthcare professional.

Triage should be performed by registered nurses and not licensed practical/vocational nurses ("LPN").[79]

While Corizon policy specifies that triage should be performed by a qualified health professional, in practice, HSRFs requesting dental care may be triaged by LPNs.[80] The LPN reviews the HSRF and decides whether a face-to-face-assessment is necessary. That is a clinical decision, and beyond the ambit of an LPN. Furthermore, if the LPN performs a face-to-face examination, the LPN must decide whether the issue is emergent, urgent, or routine. While the protocol provides some guidance, the LPN must make a ***clinical*** decision that is beyond the scope of his or her training.

b. Compliance with ADOC Contract

i. X-rays

Corizon Oral Care Policy P-E-06.00 [Dunn(Corizon)_00583-585] provides the policy guidance to CDAA for providing dental services to ADOC prisoners; however, it omits important requirements set forth in the ¶5.26 (A) of the ADOC Contract[81] [ADOC000633-ADOC000634]. It requires, *inter alia*, that "[x]-rays are used appropriately to develop the treatment plan" [Dunn(Corizon)_00583]. Note that notwithstanding the ADOC contract requirements that dental care be provided consistent with federal guidelines [*id.*], Corizon condones an x-ray policy at variance with the policy published by the Food and Drug Administration ("Radiographic Examination") that is included in the CDAA Resource Binder [Dunn(Corizon)_10255-10283].[82]

ii. Routine Care

The ADOC contract requires that "[r]outine care will be provided within fourteen (14) days of an inmate's request for treatment" [ADOC000634]; however, none of its dental care policies state such a requirement. Furthermore, none of its audit instruments address compliance with this contractual requirement.

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[79] "Nurses of varying educational levels practice in correctional facilities. Licensed practical/vocational nurses perform tasks such as transcribing orders, administering medications, health screening, phlebotomy, providing medical treatments in an ambulatory or infirmary setting, conducting rounds in segregation units, and assisting with patient tracking systems. Registered nurses conduct triage, perform nursing assessments, and provide direct care to patients." [Nursing Role and Practice in Correctional Facilities at 419].

[80] For example, the records for Plaintiffs Patient 5 (MR003013-14, MR003019-20, and MR003024-25); Patient 17 (MR011289-90 and MR011294-5); and Patient 60 (MR001669-70 and MR001674-5) demonstrate that none of the encounter tools was countersigned by an RN.

[81] "Dental services will be provided to inmates consistent with local and federal guidelines and community standards" [Corizon Contract ¶5.26 (A) Dental Services (ADOC000633)], routine care will be provided within 14 days of an inmate's request for treatment [*id.* at ADOC000634], and treatment to include but is not limited to periodontal screening, evaluation, and limited early treatment [ADOC000634].

[82] Dr. King's role Corizon's dental subcontractor as well as Corizon's Regional Dental Director suggests to me that CDAA is, for all practical purposes, a part of Corizon.

c. Summary

Notwithstanding Corizon's policy that triage be performed by qualified health professionals, Corizon allows unqualified personnel to make clinical decisions, placing all ADOC prisoners who submit HSRFs for dental problems at risk of harm. Similarly, despite a contractual requirement that dental care should be provided consistent with federal guidelines, Corizon allows CDAA to maintain a policy and practice of not informing routine examinations and treatment plans with x-rays. Finally, Corizon's policies are mute as to the ADOC requirement that routine care be provided within 14 days of request.

4. CDAA Policies, Procedures, and Practices

Correctional Dental Associates of Alabama policies and protocols[83] comprise extractions, intraoral fixation, anticoagulation, qualification for dental prosthetic devices, SOAP/SOI, radiographs, premedication, and infection prevention. These policies, as well as other clinical guidance, are compiled in a Resources Binder that is present in all dental clinics.[84]

a. Initial Examination.

According to Dr. King, at intake, prisoners receive "a thorough dental examination" [King Dep. 41:16-42:3] that includes an examination, a charting, a treatment plan and a PSR[85] [*Id*.]. 44:19-45:8. However, as explained further below, a thorough examination is not being offered. Radiographs are taken at the time of treatment of a tooth but not to determine whether or not treatment is needed [*Id.* 46:8-15]. There is no policy relating to timeliness of urgent and routine care appointments.

b. Annual Dental Screening

The ADOC contract specifies that "[v]endor will provide annual dental screenings[86] to inmates from the date of the last treatment or exam given, and more often if clinically indicated"

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[83] Extraction Policy as of 10/10/2014 [Dunn(Corizon)_10199]; Intra-oral Fixation (Wired Jaw) Policy as of 10/10/2015 [Dunn(Corizon)_10200]; Anti-coagulation Policy as of 10/10/2014 [Dunn(Corizon)_10201]; prosthetic protocol (no title or start date) [Dunn(Corizon)_ 1020]; SOAP/SOI Policy as of 10/10/14 [Dunn(Corizon) 10202]; Radiographic Policy as of 10/10/2014 [Dunn(Corizon)_ 10253]; Premedication Policy as of 2/18/2015 [Dunn(Corizon)_ 10253]; and Infection Prevention Program, Policy & Procedure as of 7/13/2013 [Dunn(Corizon)_10484].

[84] "This Dental Resources Binder is provided to you to give you background and educational information for day-to-day dental operations in the Alabama Correctional System setting. Policies and Procedures herein are set out and defined by the contracting company according to ADOC contract requirements, external audit experiences and suggestions, and Corizon Health policy and procedures, and as such, will be followed in so far as they are not in conflict with state law under the Alabama Dental Practice Act and Board Rules […]." [Dental Resources Binder (Dunn(Corizon)_101174)].

[85] The CDAA Resources Binder does not have a policy addressing the PSR, so I cannot determine the effective date. From my chart review, it appears that it was not performed before October, 2014.

[86] A 'screening' is not an examination. For example, the ADOC contract requires that "[a]ll inmates are required to receive initial dental screening, ***under the supervision of a licensed***

[Dunn(Corizon)_10205]. My record review found that the screening was generally performed by a dental hygienist[87]. The contract also requires that "[d]ental cleaning will be offered once yearly to those inmates who are: diabetic, taking Dilantin, or are taking calcium channel blockers. Special consideration for cleanings is also to be given for inmates who are immune compromised due to illness or treatments." [*Id*.]

While a "complete" dental examination[88] is performed at intake, subsequent periodic examinations ***performed by a dentist*** are not required. Rather, a 'screening' that can be performed by any qualified health personnel is performed [King Dep. 116:21-117:11]. "[a] Screening is basically looking in to see if there is any problems that are visible and listening to any complaints that the inmate may have." [*Id*. 117:17-22].

Dr. King opined that that the "[t]he American Dental Association recommends an EXAM *at least yearly*, depending on overall oral health. This sets the ethical rule for the practice of dentistry and frequency of examinations." [King email to Katherine Gibson; King Dep. PX004-001 (emphasis in original)]. Dr. King continued, "[u]nder our conditions[89], however, two (2) years for an exam is not unreasonable." [*Id*.]. But Dr. King's ethical compromise acceding to a biennial examination by a dentist appears nowhere in CDAA, Corizon, or ADOC policy.

c. Oral Surgery Referrals

According to Dr. King, an oral surgeon visits Donaldson and Bibb approximately once a month [King Dep. 32:17-33:15] and inmates at other prisons are referred to oral surgeons in the community with Dr. King's approval [*Id*. 32:2-19]. Dr. King testified that typically, it takes only a day or two from when he approves a request for offsite treatment for the inmate to be seen. *Id*. 35:15-20. Dr. King is the approval authority for all off-site oral surgery referrals. [Dunn(Corizon)_101199 at ¶V].

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dentist, within seven (7) days of admission into the ADOC." [Dunn(Corizon)_10205 (emphasis added)].

[87] This is problematic because unlike the intake screening that (per the ADOC Contract [ADOC000633]) is performed within seven days of intake, and is followed shortly by an intake examination performed by a dentist [King Dep. 41:16-42:3], the Annual Dental Screening (which may be performed by a non-dentist) is in lieu of an annual dental examination (performed by a dentist). While a dental hygienist may refer patients to a dentist for follow-up, a dental hygienist (who has substantially less training than a dentist) may miss significant pathology that a dentist would notice. Furthermore, a dental hygienist is not qualified to make a treatment plan. The practice of substituting a dental hygienist for a dentist may place a prisoner at risk if dental injury.

[88] While the exam is described as "complete," it is not informed by radiographs so it is below accepted professional standards.

[89] That is, "the conditions that we have as far as staffing and our populations" [King Dep. 124:16-125:23]. I take this as an admission on the part of Dr. King that the dental program is understaffed to the point that it must deviate from what he initially opined were ethical principles.

However, there appears to be an unwritten policy (or a practice) of requiring that an inmate complain three times before a request to refer a person to an oral surgeon can be submitted to Dr. King. This greatly restricts inmates' access to oral surgery.

- Patient 1 complained of pain in #32 on 2/8/16 (according to dentist's progress notes, "#32 horizontally impacted and per policy, he will need to complain 3 times before request is submitted"). He was prescribed Ibuprofen (an analgesic) for 15 days. The tooth continued to hurt and he was examined on 2/22/16 ("patient will need oral surgery for removal. Second complaint."). He was prescribed another 15-day course of Ibuprofen. An examination and treatment plan dated 3/16/16 indicated #32 for extraction.[90]
- Patient 2 was seen on sick call (pain in lower left jaw) by a dentist 5/26/15 (#18 decayed and #17 horizontally impacted. Needs OS [oral surgeon]) and was placed on a course of antibiotics. She was seen again for pain in #18 on 8/18/15 (pain #18. Unable to extract) and the was placed on another course of antibiotics. She was seen 9/4/15 (mouth still hurts. OS needed for #17, 18) and was placed on a third course of antibiotics. This delay resulted in gratuitous pain, prolonged infection, and preventable courses of antibiotics.

d. Periodontal Treatment.

CDAA does not have a policy on periodontal diagnosis and treatment; however, the Dental Resources Binder contains material relating to the PSR [Dunn(Corizon)_10181-Dunn(Corizon)_10198]. The material explains the rationale and procedure for the PSR as well as the clinical significance and implications of each score.

For example, a sextant with a PSR score of 3 should have "a comprehensive periodontal examination and charting of the affected sextant" and "[i]f therapy is indicated and performed, a comprehensive examination is necessary to assess therapy and need for further treatment." [Dunn(Corizon)_10193]. "This examination should include but not be limited to identification of probing depths, mobility, gingival recession […] & radiographs." [*Id.*].

Similarly, the treatment option for a sextant with a PSR score of 2 is "OHI [oral hygiene instruction] and appropriate therapy, includes subgingival plaque removal, plus removal of calculus and correction of plaque-retentive margins of restorations"[91] [*Id.*] Notwithstanding the guidance in the Dental Resources Binder, Dr. King testified that scores of 1 – 3 were "acceptable" and would not warrant a follow-up [King Dep. 67:8-68:11].

e. Endodontic Treatment.

Endodontic (root canal) treatment is a component of routine care specified in the ADOC contract [ADOC000634]. However, while there are several procedures listed in the "Endo" section of the Day Sheet (Fig. 6c), endodontic (root canal) therapy is not among them. In fact,

[90] A practice that requires three complaints for an oral surgery referral is highly problematic and can result in gratuitous pain and unnecessary exposure to antibiotics and analgesics. Dr. King testified that he could not think of any time he refused a request to authorize an oral surgery referral [King Dep. 33:18-22]. Note that there is no mention about the "three complaint rule" in the CDAA Extraction Policy Dunn(Corizon)_10199].

[91] I interpret this to mean that at a minimum, a dental (oral) prophylaxis should be performed.

none of the listed procedures are endodontic but rather procedures performed incident to general restorative dentistry.[92] Since the number of root canal treatments performed is not collected, there is no way for ADOC to know how many (if any) are performed.[93]

While CDAA does not have a separate policy for endodontic treatment, it is addressed indirectly in the CDAA Extraction Policy [Dunn(Corizon)_10199].

> Due to changing standards for endodontic treatment in molars and other posterior teeth (operating microscopes, etc.) and the ***unavailability*** or fixed prosthetic restoration of a posterior endodontic tooth, extraction remains a viable alternative. ***It is the same treatment received by deploying soldiers/sailors/airmen/marines in a similar situation***. Endodontic treatment for anterior teeth may be considered, but the ***limitations of further restoration*** must be considered. In most cases, the teeth are far beyond anything less than heroic measures for restoration. The same limitations apply to those teeth requiring full coverage restorations. The only materials available are amalgam and composite, and pulpal compromise and living environments should be factors in the decision making process. [94]

[*Id*. (emphasis added)].

It is telling that CDAA has taken the contractual mandate to provide endodontic treatment and distinguished it to death. While reducing (to the point of elimination) endodontic treatment is beneficial to Corizon's bottom line, it ill serves ADOC prisoners.

C. Staffing

> ***In my opinion, based on a reasonable degree of dental certainty, the ADOC contracts for too few dentists, dental hygienists, and dental assistants to provide adequate treatment to its prisoners – even for the inadequate level of care that is***

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[92] Corizon's Monthly Client Report does not report endodontic procedures ***even as defined by CDAA.*** *See,* for example, the 2014-2015 Alabama Roll-Up [ADOC043447].

[93] I saw no documented root canal treatment in the records I reviewed.

[94] The 'unavailability' is not due to a proscription in the ADOC contract. In fact, the contract includes endodontics and prosthetics. Moreover, the contract does not restrict tooth replacement to removable prosthetics (and prohibit "full coverage" so it provides no basis for CDAA to justify its *per se* exclusion. Furthermore, the conclusory statement that (in apparent justification of the minimalist CDAA policy) deploying military personnel receive the same treatment as CDAA provides to ADOC prisoners is conclusory, self-serving, irrelevant, and false. In fact, military personnel who require treatment for (*inter alia*) chronic oral infections, pulpal or periapical lesions are "normally not considered to be worldwide deployable" until the underlying problem is resolved [*see* Department of Defense Health Affairs Policy: 02-011. Oral Health and Readiness Classification System at ¶c]. S*ee* also Army Regulation 40-35 mandating priority dental appointments for individuals in the non-deployable category [¶ 6(a)(3)]. While the policy does not prescribe treatment, neither does it sanction inadequate care to make an individual deployable.

Similarly, CDAA policy states that for the same reasons that he uses to exclude endodontic treatment on posterior teeth and the (self-imposed) limitation to amalgam and composite restorative materials should be a factor "in the decision making process".

currently provided. Providing dental care consistent with accepted professional standards will require more dentists, dental hygienists and dental assistants.

The ADOC contract requires the dental program to be staffed by 12.6 dental full-time equivalents ("FTE"), 12.6 dental assistant FTEs, and 3.2 dental hygienist FTEs [ADOC000554] to treat approximately 24,189 prisoners[95]; a ratio of 1,920 prisoners to dentist.[96] The dental program substantially underdiagnoses caries and periodontal disease (¶IV E(1), *infra*), thus, it artificially reduces the treatment load since prisoners will not request treatment for conditions of which they are unaware. If CDAA provided dental care in conformance with accepted professional standards, it would require a substantial staffing increase.

Table 1 compares current ADOC dentist and dental hygienist staffing ratios with those of other systems that are under or have recently emerged from court supervision described in ¶I C(8).

Table 1. ADOC Dental Staffing in Context

Source	Inmate: Dentist	Inmate: Dental Hygienist
Alabama	1,920:1	7,740:1
Arizona	1,178:1	*
California	600:1	2,000:1
Ohio	1,200:1	2,100:1
Makrides *et al*.	1,000:1	**

* Ratio unavailable. While the Arizona inmate:dentist ratio is based on agreed-upon staffing levels as part of a settlement agreement, the settlement was silent as to dental hygienists.

** Assumes "hygiene support will be provided".

As discussed in ¶I C(8), there is no cookie-cutter staffing ratio for a prison dental program. However, based on inadequate policies, procedures, and practices that substantially understate prisoners' dental needs and the inadequate treatment I document, the staffing ratios should be increased to between 1,000:1 and 1,200:1 for dentists and 2,000:1 for dental hygienists.[97] This must happen in conjunction with the policies, procedures, and practices being brought to accepted professional standards.

To summarize, ADOC dentist staffing is substantially below what has been recommended in the correctional literature as well as that of other departments of corrections that have emerged from or are subject to federal court monitoring. The inmate to dental hygienist ratio is substantially above those of California and Ohio.

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[95] ADOC in-house population per ADOC March Statistical Report at 2. http://www.doc.state.al.us/docs/MonthlyRpts/2016-03.pdf (viewed 6/24/2016).

[96] Dr. King testified that dentist staffing is adequate [King Dep. 29:16-22].

[97] The initial ratios should be adjusted based on the extent of compliance on quantifiable clinical goals determined by a dentist-monitor.

D. Records Reviewed

I reviewed records of 39 prisoners who were identified to me as Plaintiffs, as well as 181 records of other prisoners.

E. Clinical Findings

1. Inadequate Diagnosis and Treatment Planning

In my opinion, based on a reasonable degree of dental certainty, the policy and practice of the CDAA Dental Program of performing routine examinations and treatment plans without x-rays results in underdiagnosis of dental caries and periodontal disease that subjects prisoners to substantial risk of tooth morbidity, tooth mortality, and gratuitous pain.

Moreover, the ADOC's failure to require documented periodontal probing at initial and periodic examinations (a standard of care in dentistry) until October, 2014 placed many inmates at risk of suffering preventable pain and tooth morbidity by underdiagnosing and failing to appropriately monitor periodontal disease, and the resulting harms are latent and incremental. Furthermore, even when moderate or advanced periodontal disease is identified, the appropriate non-surgical procedure is not ordered.

The ADOC contract requires that inmate care will be provided "consistent with local and federal guidelines and community standards" [ADOC000633]; however, performing examinations and treatment planning without benefit of x-rays and periodontal probing[98] is both below accepted professional standards and in conflict with the Corizon Oral Care Policy ("[…] ***X-rays are used appropriately to develop the treatment plan***.") [Corizon P-E-06.00, ¶5 Dunn(Corizon)_00583] (emphasis added)] and ("[a]dental examination includes: […] [x]-ray studies for diagnostic purposes are taken if necessary") [*Id.* at ¶15].

As discussed in ¶ I C(4)(a), *supra*, a treatment based on an examination lacking appropriate x-rays is below accepted professional standards, and a policy that establishes that practice or a program that condones that practice exposes prisoners to substantial risk of harm. Failure to use radiographs appropriately will result in substantial underdiagnosis of asymptomatic dental disease – and treatment may not occur until the prisoner complains of a toothache. Depending on the initial condition of the tooth, the extent of the delay, and individual factors such as rate of disease progression, teeth that could have been restored relatively simply may become more complex or may not be restorable at all. As a result, prisoners will suffer gratuitous pain as well as preventable tooth morbidity and mortality.

a. Diagnosis of Caries

Radiographs for routine examinations were almost nonexistent. My observations were confirmed by Dr. King's testimony that when inmates are first admitted to the prison system "[t]hey're brought into the dental department; and the dentist on-site there does thorough examination, charts them out, formalizes a treatment plan, and gives them education on healthy mouth and gums, how to take care of their teeth." [King Dep. 41:16-42:3]. However, x-rays are

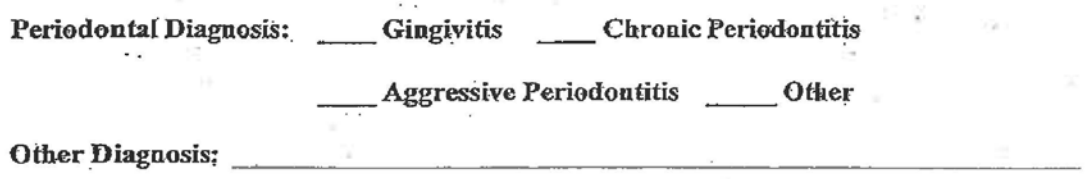
[98] CDAA first required the use of the PSR in October, 2014

not made at this examination [*Id.* 45:5-46:7].[99] Consequently, dental caries is likely to be underdiagnosed and progress until it becomes symptomatic. Of the dentate Plaintiffs whose Dental Treatment Plan and Treatment Records I reviewed, none of the treatment plans were informed by sufficient recent x-rays[100].

b. Inadequate Diagnosis of Periodontal Disease

The ADOC contract with Corizon requires that dental treatment "will be based on assessed needs and will include, but will not be limited to, the following: […] periodontal screening, evaluation, and limited early treatment […]" [Dunn(Corizon)_10177]. Moreover, the contract requires that "Corizon will continue to provide a quality on-site oral health care program in accordance with local and federal guidelines, ADOC-OHS policies and procedures, ADA [American Dental Association] standards and NCCHC and ACA standards of care[101]." [Dunn(Corizon)_10175]. Figure 8 is the portion of the examination and treatment plan form that relates to periodontal disease and Figure 9 is the PSR score stamp used in the dental chart. Figure 9 shows the PSR data entry form[102].

Figure 8. Periodontal Diagnosis Section of Treatment Plan and Treatment Record Form



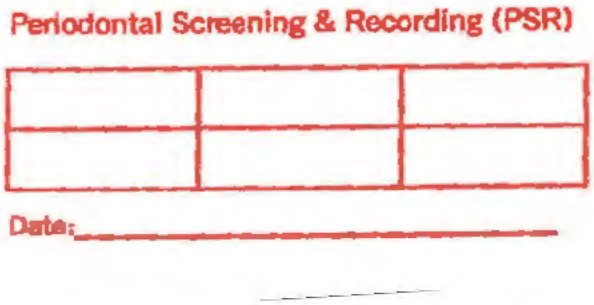
[99] However, Corizon Oral Care Policy specifies that, "[r]adiographs are appropriately used in the development of the treatment plan." [¶5 at Dunn(Corizon)_00139].

[100] Plaintiffs Patient 3, Patient 4, Patient 5, Patient 6, Patient 7, Patient 8, Patient 9, Patient 10, Patient 11, Patient 12, Patient 13, Patient 14, Patient 15, Patient 16, Patient 17, Patient 18, Patient 19, Patient 20, Patient 21, Patient 22, Patient 23, Patient 24, Patient 25, Patient 26, and Patient 27 had treatment plans that were not informed by sufficient recent x-rays.

[101] *See*, ¶ IC(4)(a), *supra*.

[102] In this report, I report PSR scores in the form, (_, _, _/_, _, _), where the underscores are replaced with the sextant score.

Figure 9. Periodontal Screening & Recording



Even when CDAA dentists indicated in the chart that a prisoner had gingivitis, chronic periodontitis, or aggressive periodontitis, it was rare that treatment other than a prophylaxis was planned. Because periodontal probing was not documented before October 2014 and radiographs are still not taken at the intake examination and recall examinations in accordance with accepted professional standards, CDAA dentists consistently underdiagnose periodontal disease. Moreover, even when a PSR score for a sextant was 2, the appropriate procedure (a prophylaxis) was often not added to the treatment plan. Similarly, while prisoners with PSR scores of 3 or 4 were sometimes treatment planned for a prophylaxis, with few exceptions, they were not treatment planned for SRP (deep scale) or re-evaluation.

Dr. King testified that while it is his opinion that an inmate who developed periodontal disease that was not diagnosed for two years would not ***necessarily***[103] be more likely to have complications or negative outcomes from that disease, it was possible that an undiagnosed periodontal infection would be a detriment to that patient's health [King Dep. 126:1-14 (emphasis added)]. [104]

[103] Dr. King sidestepped the issue. It is not whether undiagnosed periodontal disease would ***necessarily*** result in complications but rather whether (based on the natural history of periodontal disease) such a delay in treatment poses a risk of harm for prisoners.

[104] Dr. King testified that a PSR scores of 1 to 3 are acceptable and a score of 3 does not necessarily mean that a prisoner has periodontal disease but "it would be a place that you want to check in the future". [King Dep. 67:8:68:7]. However, a PSR of 3 score ***is*** problematic and requires follow-up. (*See*, ¶I C (5), *supra*). According to Dr. King, an inmate with a score of 4 would have an appointment made "to see what could be done" [*Id.* 68:8-22].

However, Dr. King's testimony is in conflict with the PSR training material he included in the CDAA Dental Resources Binder that associates PSR scores with the appropriate follow-up and treatments: PSR=2: "[i]ndividualized oral hygiene instruction and appropriate therapy, including subgingival plaque removal, as well as the removal of calculus and the correction of plaque-retentive margins and restorations should be performed"; PSR=3: "[a] comprehensive periodontal examination and charting of the affected sextant are necessary to determine an appropriate care plan. This examination and documentation should include the following: identification of probing depths, mobility, gingival recession, mucogingival problems, furcation involvement, and radiographs. If two or more sextants score a Code 3, a comprehensive full mouth examination and charting are indicated"; and PSR=4: "[a] comprehensive full mouth

i. Plaintiffs

Exhibit D-1 shows that of the 19 Plaintiffs with periodontal disease identified at the treatment plan[105], only 5 (28%) had any periodontal procedure planned. Moreover, two prisoners had PSR scores of 3 (consistent with moderate periodontitis); however, no follow-up for a complete charting was planned.

- Patient 4 was examined by a dental hygienist who indicated that he had aggressive periodontitis and treatment planned him for a prophy; however, his records did not include follow-up and further diagnosis of his periodontal condition [MR002280]. Moreover, there is no documentation of periodontal probing. This is particularly problematic because he is a type II diabetic [MR001842]. The dental chart indicates that examinations were performed on 2/15/12 and 2/5/13 [MR002294-5]; however, there is no documentation that radiographs were ordered.
- Patient 12 submitted HSRFs 4/10/12 [MR007709] and 10/22/12 [MR007697] stating that his gums bleed when he brushes his teeth and he was concerned about periodontal disease and was referred to the Dental Service. He was examined 10/31/12 and it was noted that he had generalized gingivitis; however, there is no documented periodontal probing [MR007708]. He was examined 8/8/13 and it was again noted that he had gingivitis [MR007703]. There was no documented periodontal probing and no documentation in the chart that radiographs were available for the examination.

ii. Other Prisoners

Exhibit D-2 summarizes the treatment plans for 32 dentate prisoners with identified periodontal problems. Many prisoners who were diagnosed as having gingivitis or with a sextant PSR score of 2 or greater were not treatment planned for a prophylaxis[106]. Other prisoners were diagnosed with chronic or aggressive periodontitis[107] or at with least one sextant with a PSR

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periodontal examination and charting are necessary to determine an appropriate care plan. This examination and documentation should include the following: identification of probing depths, mobility, gingival recession, mucogingival problems, furcation involvement, and radiographs. It can be assumed that complex treatment will be required." [Periodontal Screening and Recording at 6 (included in CDAA Dental Resources Binder at Dunn(Corizon)_10188)].

[105] None of the treatment plans were informed by documented periodontal probing or radiographs.

[106] While prisoners on the chronic care program generally were offered a prophylaxis by the dental hygienist who performed the annual screening, the prophylaxis was not part of a treatment plan. For example, Patient 28 (9/4/15), Patient 29 (1/27/16), Patient 30 (1/9/15), Patient 31 (2/9/16), Patient 32 (12/10/12), Patient 33 (5/21/15), Patient 34 (3/27/15), Patient 35 (2/15/13), Patient 36 (1/9/15), Patient 37 (3/27/15), Patient 38 (2/5/15), Patient 39 (2/7/14), Patient 40 (4/1/15), Patient 2 (12/30/14), Patient 41 (3/16/15), Patient 42 (6/4/13), Patient 43 (10/21/13), Patient 44 (4/1/15), and Patient 45 (11/5/14).

[107] Patient 46 (12/28/15), Patient 47 (8/2/12).

score ≥ 3[108] and were not treatment planned for the appropriate treatment (*i.e.*, SRP or deep scale). None of the treatment plans were informed by recent x-rays. Of the 20 prisoners identified with gingivitis alone, none had an oral prophylaxis planned[109]. Of the four identified with periodontitis, two had an oral prophylaxis on the plan. Of the nine prisoners with PSR scores having at least one sextant of '3' (suggestive of mild to moderate periodontitis), only three had any periodontal procedure planned – and it was only an oral prophylaxis.[110] The dental program's failure to inform treatment plans with x-rays and consistently plan non-surgical treatment for mild to moderate periodontal disease places prisoners at risk of advancing periodontal disease with attendant pain and tooth loss.

2. Inadequate Treatment of Pain and Infection

In my opinion, based on a reasonable degree of dental certainty, the treatment of prisoners' dental pain and infection is inadequate because it is untimely. As the result, prisoners are subject to preventable pain and unnecessary exposure to antibiotics.

Treatment for dental pain and infection is untimely[111]. Requests for dental care are reviewed by nursing staff who make a dental referral or refer for a nursing assessment using a Nursing Encounter Tool. Based on the clinical findings, a medical or dental referral is made. Prisoners stating pain are generally offered analgesics, and those with infections are referred to a provider (physician, dentist, or nurse practitioner) for an antibiotic. This generally occurs within a day of a prisoner's submitting an HSRF.

The weak point in the system, however, is the untimeliness of the dental department's providing ***definitive*** treatment for the problem. There are two issues here: (1) the treatment of dental abscesses and (2) the treatment of dental pain that is not associated with an abscess.

Prisoners identified by the nursing department and prisoners who state that they are in pain are assessed by nursing staff using a Nursing Evaluation Tool. The purpose of the assessment is to determine if a prisoner should have an immediate referral to a nurse practitioner, physician, or dentist, or can be a routine or urgent dental referral. Exhibit D-3 shows the disposition of 30 HSRFs for dental pain in 16 Plaintiffs. The median wait time was 17.5 days; 25 percent waited at least 33 days, and 10 percent waited more than 5 months.[112]

While a course of antibiotic therapy may be an appropriate first step in treating a dental abscess, the treatment is not complete until the source of the infection is removed; that is,

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[108] Patient 48 (1/14/16), Patient 49 (3/31/15), Patient 38 (2/5/15), Patient 50 (6/13/15), Patient 51 (5/7/15), Patient 52 (2/5/15), Patient 53 (2/26/15), and Patient 54 (4/7/15).

[109] That some may have received an oral prophylaxis as part of the chronic care program is not the point. The purpose of a treatment plan is to lay out the scope and sequencing of all appropriate treatment.

[110] See ¶ I C (5) (Treatment of Periodontal Disease).

[111] Dr. King testified that a toothache or swelling (with or without pain) is urgent care, which is appropriate. [King Dep. 62:6-9]. However, records demonstrate that such conditions are not consistently treated as urgent.

[112] Computations performed using Microsoft Excel 2016.

performing an extraction or root canal therapy – within 7 to 10 days (*see*, ¶ I C(3), *supra*). Typically, dentists see these prisoners within a day or two, perform an examination, order antibiotics (if antibiotics have not been ordered previously), and make an appointment to extract the tooth several weeks in the future. Failure to remove the source of infection timely is below professional standards and often results in gratuitous pain and unnecessary antibiotic exposure. [*Id*.]

a. Examples: Plaintiffs[113]

- Patient 55 was seen by a nurse on 1/31/12 for sick call and was placed on a 10-day course of Amoxicillin for a dental abscess and referred to the Dental Service [MR001348]. He submitted a sick call slip 2/8/11 (8 days later) to see the dentist [MR001279] and was advised that he was on the screening list for a dental hygienist "the next time she comes" [*Id*.]. A dental hygienist saw him on 3/2/12 and told him that he was scheduled to have #27 treated [MR001500]. He submitted a follow-up request on 3/22/12 and was told that he was on the list for extraction [MR001278]. He submitted a follow-up request 4/3/14 and was told that "we are working with dental as diligently as we can to get everyone to the dentist" [MR001266]. He was finally seen by a dentist 5/30/12 - 120 days after he was prescribed Amoxicillin for his abscess. This delay is below accepted professional standards (*see* discussion of dental abscesses *supra*) and as the result, Patient 55 was exposed to gratuitous pain over a two-month period.

- Patient 60 submitted an HSRF on 11/2/13 (two teeth need to be pulled) and was referred to the Dental Service by a nurse [MR001684]. He was seen again by Nursing 5/24/14 for a toothache and a dental referral was made [MR001674-75]. He submitted another HSRF ("I need my tooth pull bad, actually two of them (1) on the top back left side & the second (1) on bottom right. Broke in pieces. Plus it hard for me to eat") [MR001666] and was seen by Nursing on 6/2/14 (toothache x 2 months; pain 10/10[114]; evidence of pus collection / swelling) [MR001732] and was referred to a physician who ordered a course of Amoxicillin (an antibiotic) [MR001732] and another course 6/12/14 [MR001741]. He was finally seen by a dentist who extracted #30 and #31 [MR001665]. Starting 11/2/13, he submitted two additional HSRFs stating increasing pain and culminating with a dental abscess. The abscessed teeth were finally extracted 249 days later. As the result of this untimely dental care, he suffered gratuitous pain over more than six months and received an unnecessary course of antibiotics.

- Patient 61 submitted an HSRF 3/19/14 for a toothache [MR008963] and was seen the next day by a physician who ordered a course of Amoxicillin (presumably to treat an abscess) and Naprosyn (an analgesic) [MR008986]. He submitted another HSRF 3/31/14 stating extreme pain, and was triaged by an LPN who made a dental referral [MR008962]. He was finally seen by a dentist 4/22/14 for the extraction [MR008997[] – 98 days after his initial HSRF. Because of this delay in seeing a dentist, he suffered more than a month of gratuitous pain.

[113] The following Plaintiffs had no dental information in the health records I reviewed: Patient 56, Patient 57, and Patient 58. Patient 59 had only one HSRF and no clinical notes, and Patient 27 had only an initial exam.

[114] Reported pain rating '10' on a 0 to 10 scale.

- Patient 18 submitted a request to have a painful tooth extracted 8/25/13 and was assessed by Dr. Caldwell who ordered a course of Amoxicillin (an antibiotic) and Naproxen (an analgesic) [MR011803]. The note on the HSRF states, "appt. September 25, 2013 at 1:00 PM." [*Id.*]. However, the tooth should have been extracted within 7 to 10 days.

- Patient 5 submitted 10 HSRFs for painful teeth[115] from 8/14/12 to 6/23/14. Each time the record reports that a nurse made a dental referral. He was finally seen by a dentist who extracted two teeth on 6/25/14 – a delay of 680 days. It is not that he was ignored; rather, he was not provided appropriate care. Notwithstanding all the nurse assessments he received, only a dentist could resolve his problem – by filling or extracting the painful teeth.[116] As the result of his untimely dental appointment, he endured almost two years of gratuitous pain.

- Patient 16 submitted an HSRF 4/30/11 for fillings and was advised that he would be scheduled for a dental appointment [MR011041]. He repeated his request mentioning that his cavities were hurting on 5/27/11 and was again advised that he would be scheduled [MR011040]. After more than six months passed, he repeated his request on 3/2/12 and was advised that he will be scheduled [MR011028]. On 5/12/12, he was "screened for a filling," but the tooth was not filled. He made another request 7/9/12 [MR011027] and #14 was filled 7/20. From his first complaint of pain, 420 days passed and he was in continual pain during parts of this period.

b. Examples: Other Prisoners

- Patient 2 submitted an HSRF 5/26/15 for pain in her lower jaw and was seen by a dentist (#18 horizontally impacted. Needs OS [oral surgeon]) who prescribed an antibiotic and an analgesic. The infection recurred and on 8/18/15 the dentist (unable to extract #18) prescribed another antibiotic and analgesic course. The pain and infection persisted and on 9/4/15, the dentist prescribed another antibiotic and analgesic course. ("Mouth still hurts. OS needed for #18"). There were no further entries by 9/14/15 – the day of my audit. This delay of at least 111 days was responsible for gratuitous pain and infection.

- Patient 62 submitted an HSRF 8/17/15 for a toothache. Decay and edema were noted by a nurse, his pain score was recorded as 10/10,[117] and a referral was made to the dental service. The record reports that on 8/28, 9/4, 9/11, 9/18, 10/23, an appointment was made; however, "seg didn't bring". The tooth was finally extracted 10/29/15 – after two months of gratuitous pain.

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[115] 8/14/12 [MR003036], 8/29/12 [MR003037], 10/15/12 (teeth hurting all the time) [MR003035], 11/26/12 (teeth hurt most of the time) [MR003029], 9/1/13 [MR003026], 9/13/13 [MR003023], 10/14/13 [MR003021], 12/25/13 [MR003017, MR029254], 5/28/14 [MR003012], 6/23/14 and [MR003007].

[116] The record reports that he refused a nurse sick call appointment [MR003029] and an appointment with a dental hygienist for a tooth cleaning [MR029251]. He needed to see a dentist; not a dental hygienist or a nurse.

[117] Patients are asked to rate their pain on a scale of zero to 10; with zero representing no pain and 10 the worst pain they can recall having.

- Patient 63 submitted an HSRF for a toothache10/28/14 and was screened by the dental service and diagnosed with an abscess, and provided an analgesic and antibiotic. The note reports that he was scheduled to have #16 extracted; however, the record reports that "seg didn't bring" for the 11/7/14 appointment, and while the tooth was finally extracted 11/3/14, he suffered six days of gratuitous pain. Moreover, the tooth was not extracted per the standard of care (within 7-10 days from the time the antibiotic course began).
- In a subsequent dental incident, Patient 63 submitted an HSRF for a toothache 4/12/15 for a painful broken tooth. He resubmitted 4/22 (tooth broke in half), 5/10 (third sick call - severe pain), 5/18 (hurting since beginning of April), 12/6/15 (have put in several sick calls for this tooth). The tooth was finally extracted 12/11/15 – almost eight months later. The record reports that "seg did not bring" 4/16, 4/24, 4/30, 5/8, 5/20, 6/5, 6/12, 6/26[118], 8/28, 9/4, 9/11, 9/18, 10/2, 10/23, 11/13, and 12/4. The persistent failure of custody to ensure he was brought to his dental appointment caused him more than seven months of gratuitous pain.
- Patient 32 submitted an HSRF for a toothache 9/1/15 and was given analgesics and referred to the dental service. The record reports that "seg did not bring" him to appointments 9/11, 10/21, and 10/23. The tooth was extracted 10/29 – after 58 days.
- Patient 64 submitted an HSRF for a toothache 1/14/15 and was prescribed an antibiotic course and scheduled to have to have the tooth extracted 2/10/15 – 27 days later.[119] However, he was transferred to another prison and the tooth was not extracted until 4/15/15 – after 91 days.

To summarize, the above examples of delay / denial of care are consistent with a pattern of widespread understaffing.

3. Inadequate Treatment of Periodontal Disease

In my opinion, based on a reasonable degree of dental certainty, CDAA dentists do not provide adequate non-surgical treatment for periodontal disease. Even when periodontal disease is identified, prisoners are rarely treatment planned for anything beyond a prophylaxis, such as scaling and root planing (referred to as a 'deep scale' in ADOC). Moreover, despite not including deep scaling on the treatment plan, it is often documented to have been done by the dental hygienists in conjunction with a prophylaxis. Clinically appropriate treatment for mild to moderate periodontal disease cannot be accomplished in the time allotted. This is below accepted professional standards and places prisoners at risk of preventable tooth morbidity and tooth mortality.

Not only do the CDAA dentists fail to diagnose periodontal disease, but they fail to treat it appropriately when it is diagnosed. Dr. King testified that he considers cleanings to be periodontal care [King Dep. 94:13-20] and when an inmate is diagnosed with periodontal disease

[118] The entry for 7/3 reports, "I/M refusal, refusal signed"; however, the putative refusal is not in the record.

[119] The standard of care is to extract the tooth while the antibiotic is working is within 7-10 days (*see*, ¶I C(3)).

there is no treatment provided because "[p]eriodontal disease is a chronic problem, and most sites would not be equipped to handle a specialty care like that" [*Id*. 94:21-95:9]. However, he later testified that root planing is a deeper scaling than is normally done at regular cleanings that is indicated when there is a sufficient buildup of calculus, plaque and irritated gum tissue in a pocket [*Id*. 122:4-123:3]. He does this for inmates at St. Clair and makes a notation in the prisoner's dental or medical record when he has done so [*Id*. 123:4-13]. I reviewed the Day Sheets for St. Clair Correctional Facility from March 2014 through July 2015 [ADOC128277-128824]. In the 16-month review period, only one patient for whom a deep scale was recorded received a carpule of local anesthetic.[120] Since the St. Clair Day Sheet combines the patients seen by all dental staff, I was not able to determine how many 'deep clean' procedures Dr. King performed; but however many deep scale procedures he performed, only one patient was treated using local anesthetic.

I reviewed the Day Sheets and found that the vast majority of deep scale procedures were reported by dental hygienists – and all the procedures were 'bundled' with prophylaxis and oral hygiene instruction; that is, all prisoners received the same number of quadrants of prophy and deep scale. Moreover, none of the deep scale procedures were associated with the use of local anesthetic[121]. This is illustrated by Exhibits D-4 and D-5 that show all the prophylaxis and deep scale procedures reported by two dental hygienists over a six-month period at Bibb and Limestone Correctional Facilities and (based on my review of other Day Sheets) it is representative of the other dental hygienists and prisons. On most days, the dental hygienist reported performing six to eight such 'bundles'.[122] Moreover, in my experience auditing and monitoring correctional dental programs, a dental hygienist can be reasonably expected to

[120] On 12/2/14, 2 quadrants of prophy, 2 quadrants of deep scale, and Oral Hygiene Instruction, and one carpules of local anesthetic were documented as provided to Patient 66 at St. Clair [ADOC128309].

[121] Dental hygienists are not permitted to administer local anesthesia in Alabama. [States that Permit Dental Hygienists to Administer Local Anesthesia, 2012 (revised 2015) ("ADHA Local Anesthesia")]. While it is possible that a dental hygienist asked a dentist to administer local anesthesia, the use of local anesthesia would be documented in the dental chart and recorded on the Day Sheet. Although the Day Sheet has a field to record the number of carpules of local anesthetic used (Figure 6b), none of the records I reviewed had documented the use of local anesthesia in conjunction with a deep scale procedure. It strains credulity that the putative procedure could possibly be a SRP.

In the dental charts I reviewed, only a handful of the entries for oral prophylaxis mention that a 'deep scale' was performed, and none mentions the use of local anesthetic. Among the requirements of the Alabama Dental Board (Rule 270-X-2.22) is that, at a minimum, every record will have "[t]he date treatment was rendered. ***The type of treatment rendered*** […]." [Dunn(Corizon)_10212](emphasis added).

[122] Between 1/22/14 and 9/15/15 the St. Clair Dental Clinic (where Dr. King maintains his clinical practice) reported that 197 patients received a dental prophylaxis, of which 187 were concurrent with an annual examination. The Day Sheet reports that all patients received the same number of quadrants of deep scale as dental prophylaxis. Only two patients (Patient 65 and Patient 66) were reported to have received local anesthetic – and both also had teeth extracted at that appointment [ADOC128277-ADOC128824].

perform an oral prophylaxis combined with oral hygiene instruction between six and eight patients in an eight-hour day. To add four quadrants of deep scale to the prophy (assuming it were clinically appropriate – which it is not), would likely increase the required time three or fourfold. The 'deep scale' procedure as reported by CDAA hygienists on all prophy patients cannot possibly be scaling and root planing is a phantom treatment; a sham to conceal CDAA's lack of proper non-surgical periodontal treatment and Corizon's and ADOC's condonation of this practice.

This raises several areas of concern. First, it appears that CDAA policy and practice is to bundle deep scale with a prophy in the same time that is allotted for a prophy. An SRP (*i.e.*, deep scale) is a separate procedure that requires a substantial amount of time. Second, no local anesthesia is given for the deep scale procedure. A clinically effective SRP requires planing (*i.e.*, smoothing as a carpenter does with a plane) the root surface that can cause substantial discomfort and in my experience few patients can tolerate it without local (or occasionally, topical) anesthetic. Moreover, dental hygienists failed to document treatment provided and as well as the clinical necessity of treatment performed[123].

Finally, SRP is indicated only for periodontal pockets 4 millimeters or greater (*i.e.*, a PSR score of 3 or 4). It strains credulity that ***all*** the sextants of prisoners who received deep scale procedures had PSR scores of 3 or 4. Casting further doubt on the validity of the deep clean procedure as recorded in the Day Sheet is the fact that until approximately October, 2014 there was no documented periodontal probing in the dental charts.

Of the 79 charts I reviewed that documented PSR scores, 52 (66%) reported no sextants with a score of three or four; that is, where a deep scale was indicated clinically (Exhibit D-6).[124] Assuming that the PSR scores of the records I reviewed are generally representative of the scores of ADOC prisoners, that all prisoners received four quadrants (*i.e.*, full-mouth) deep scaling strains credulity to the breaking point.

4. Inadequate Routine Care

In my opinion, based on a reasonable degree of dental certainty, the amount of routine care provided to ADOC prisoners is insufficient because early-stage dental disease is underdiagnosed and treatment is often delayed until the disease has advanced to the point where the tooth is not salvageable. This places prisoners at risk of gratuitous pain, tooth morbidity, and tooth mortality.

The ADOC contract requires, *inter alia*, that routine care will be provided within "fourteen days of an inmate's request for treatment." However, the Plaintiffs' charts I reviewed suggest that the requirement is ignored. Moreover, while the contract requires that "[d]ental prosthetics will be completed and delivered within ninety (90) days of a 'wax-in'" [*id.*], it is mute about how to expedite precursor restorative and periodontal treatment. So while dentures may be made promptly from the time of the 'wax-in', it may take more than a year to get to that point.

[123] The deep scale procedure is rarely included in a treatment plan.

[124] Nine prisoners had 1 sextant, 1 had 2 sextants, 3 had 3 sextants, 3 had four sextants, 1 had 5 sextants, and 9 had 6 sextants of PSR=3 or 4.

The annual screening required by ADOC is not an examination – and consequently need not be performed by a dentist (*see* ¶IV B(4)(b), *supra*). They are generally performed by a dental hygienist.

a. Examples: Plaintiffs

- Patient 16 submitted an HSRF 4/30/11 for fillings and was advised that he would be scheduled [MR011041]. He repeated his request mentioning that his cavities were hurting on 5/27/11 and was advised that he would be scheduled to see a dentist [MR011040]. After more than six months passed, he repeated his request on 3/2/12 and was advised that he will be scheduled [MR011028]. On 5/12/12, he was "screened for a filling" but the tooth was not filled. He made another request 7/9/12 [MR011027] and #14 was filled 7/20. From his first request for fillings, 436 days passed and he was in continual pain during parts of this period.
- Patient 19 requested treatment for bleeding gums 5/15/12 [MR012146] and did not receive a dental appointment until 7/26/12 – after 62 days. He again requested treatment for bleeding gums 2/28/13 [MR011950] and received a dental appointment 4/3/13 [MR012180] – after 34 days.
- Patient 20 requested a cleaning 3/18/13 [MR012180] and did not receive a dental appointment until 6/6/13 [MR012525] – after 80 days.
- Patient 67 had many non-restorable teeth [MR015041] and requested on 4/23/12 that they be extracted [MR014907] so that he could have dentures. Several teeth were extracted 7/9/12 [MR015036] – after 77 days.[125] He requested on 8/12/12 that more non-restorable teeth be extracted [MR014903] and a tooth was extracted 10/9/12 [MR015029] – after 58 days. He requested on 2/2/13 that other non-restorable teeth be extracted [MR014900] and two teeth were extracted on 3/12/13 [MR015029] – after 38 days. His dentures were delivered 8/14/13 [MR015024] – 478 days after the 4/23/12 treatment plan. He reported that his lower denture was hurting his gums on 10/15/13 [MR014893] and was seen 11/13/13 [MR015024] – after 29 days.
- Patient 9 received what is documented as an "annual exam"[126] and OHI 5/31/12 [MR006113] another "annual exam" 12/13/13[127][*Id*]. While two teeth (#30 and 31) were marked to be filled due to caries, there is no documentation that radiographs were taken of either tooth and the "date completed" column is blank [MR006119].

[125] He was seen 6/11/12 and x-rays were taken [MR015036]; however, the teeth were not extracted at that time. The x-rays should have been taken at his treatment planning appointment on 4/23/12 [MR015041] (*see*, ¶ IC(4)(a), *supra*).

[126]Both the clinical progress notes [MR006113] and the Day Sheet [Dunn(Corizion)_10630] document the visit as an "annual exam"; however, there is no documentation that radiographs were taken at either appointment

[127] The record reports that he missed a 4/12/13 appointment because "seg did not bring". [*Id*.].

b. Dental X-ray Logs

I reviewed Dental X-ray Logs for seven prisons[128] covering the three-month period 3/25/15 through 6/30/15 that comprised 980 prisoners.[129] The x-ray logs demonstrate that the predominant use of x-rays is to diagnose end-stage dental disease or for planning an extraction – with 767 of the 980 prisoners (78%) documented to have at least one tooth that is non-restorable. Similarly, 684 prisoners had x-rays taken as the result of complaints relating to dental pain; clear evidence of the lack of emphasis on identifying dental problems before they develop into urgent care issues.[130]

The Bibb x-ray log is consistent with a program that is heavily weighted towards end-stage disease. Of the 192 prisoners on whom x-rays were taken, 172 (90%) has x-rays taken for an urgent care issue (a cavity, broken tooth, or pain and swelling) and 150 (78%) were found to have at least one unrestorable tooth that was classified as NR (non-restorable) – and would be scheduled for extraction. Further confirmation of the lack of routine care is that no bite-wing x-rays were reported to have been taken[131].

The Kilby x-ray log is consistent with a program that is heavily weighted towards end-stage disease. This is not surprising for a reception center. Of the 189 prisoners on whom x-rays were taken, all but 2 were seen for painful problems and the clinical impression (after the x-rays were interpreted) was that 160 (85%) had an unrestorable tooth (for which, under CDAA policy, the only available treatment is extraction). Tutwiler (the female reception center), reported taking x-rays on 200 prisoners; 184 (92%) of which were for reasons related to pain.[132]

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[128] Tutwiler [ADOC0320736-0743], Kilby [ADOC0320618-0632], Bibb [ADOC0320633-0640], Easterling [ADOC0320613-0621], Holman [ADOC0320641-0643], St. Clair [ADOC0320728-0733], and Ventress [ADOC0320744-0748]. Logs for the remaining prisons have yet to be produced. What purported to be an x-ray log for Limestone [ADOC0320644-0727] was not an X-ray Log but a Day Sheet. When asked if other x-ray logs existed and whether the Day Sheet was used as an x-ray log at Limestone, Defendants' counsel responded, "[t]he State completed production of dental x-ray logs. We also confirm that what the State produced for Limestone was the correct log." [E-mail from Stephen Rogers to Miriam Haskell dated 6/22/2016; subject: Re x-ray logs]. I take this to mean that Bullock, Donaldson, Fountain, Limestone, and Staton were not in compliance with CDAA Radiographic Policy and kept no Dental X-ray Logs.

[129] I explicitly assume that the logs for this three-month period are representative of those of other periods. However, if other logs are produced, I will review them and reassess this assumption.

[130] The logs identified only seven prisoners at two prisons who received bite wing x-rays ("BWX"). Easterling: Patient 68 [ADOC0320614]; Patient 69, Patient 70, Patient 71, Patient 72 [ADOC0320615]; and Patient 73 [ADOC0320616]. St. Clair: Patient 74 [ADOC0320733].

[131] *See* ¶I C(4)(a), *supra* for a discussion of the importance of bite-wing x-rays in routine examinations.

[132] While it is understandable that reception centers will have a constant influx of prisoners – many of whom have painful teeth, the ADOC has chosen to do the initial dental examination and treatment plan at the reception center (rather than the prison to which the

Table 2. Summary of Dental X-ray Logs							
Prison	**Prisoners**	**Reason for X-ray**			**Clinical Impression**		
		Pain (%)	**Caries (%)**	**Perio (%)**	**NR (%)**	**Filling (%)**	**Perio (%)**
Total	980	684 (70)	234 (24)	38 (4)	767 (78)	129 (13)	24 (2)
Bibb	192	31 (16)	141 (73)	9 (5)	150 (78)	27 (14)	2 (1)
Bullock	*						
Donaldson	*						
Easterling	119	23 (19)	47 (39)	25 (21)	70 (59)	17 (14)	7 (6)
Fountain	*						
Holman	78	49 (63)	20 (26)	0	42 (53)	19 (24)	0
Kilby	189	187 (99)	2 (1)		160 (85)		
Limestone	*						
St. Clair	150	112 (75)	18 (12)	2 (1)	115 (77)	11 (7)	4 (3)
Staton	*						
Tutwiler	200	184 (92)	4 (2)	2 (1)	128 (64)	45 (23)	2 (1)
Ventress	130	98 (75)	2 (2)	0	102 (78)	10 (8)	9 (7)

* No Dental X-ray Logs provided.

To summarize, the x-ray logs I reviewed are consistent with a dental program that is understaffed and primarily treats end-stage dental disease to the near-exclusion of routine care. Failure to use x-rays for routine examinations and treatment plans below accepted professional standards and places prisoners at risk of gratuitous pain, tooth morbidity and tooth mortality from advancing undiagnosed (and untreated) dental disease.

5. Unsafe Extraction of Teeth

In my opinion, based on a reasonable degree of dental certainty, the practice of extracting teeth without recent preoperative radiographs increases the likelihood of complications during and after the surgical procedure, and falls

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prisoner is assigned). The urgent care workload is simply too great given the limited staffing to perform a proper examination and treatment plan using clinically appropriate x-rays.

far below generally accepted professional standards placing prisoners at substantial risk of serious harm. Simply put, this practice is reckless clinical behavior.

Until CDAA revised its Radiographic Policy in October 2014, dentists were not required to view a recent preoperative radiograph before extracting a tooth.[133] [CDAA Radiographic Policy as of 10/10/2014 at Dunn(Corizon)_10253]. Table 3 shows the radiographs, extractions and fillings reported from October 2011 through September 2014 at the male and female reception centers.[134] Since a prisoner's first dental examination and treatment plan occurs at the reception center, there are no pre-existing radiographs in the dental chart; so any pre-operative radiographs would have to be taken at the reception center.

- Patient 4 had tooth #28 extracted 5/24/13 [MR002301]; however, there is no documentation in the clinical notes that a radiograph of the tooth had been taken.
- Patient 11 had eight teeth extracted between 3/3/14 and 6/18/14; however, there is no documentation that radiographs of the teeth were available for the extractions [MR007143].

While records of dental patients at Kilby (a male reception center) showed more radiographs than extractions and fillings, it is reasonable to assume that the vast majority of extractions and fillings were performed with pre-operative radiographs. On the other hand, records of dental patients at Tutwiler (a female reception center) showed between four and six percent as many radiographs as extractions for a three-year period. Clearly, the vast majority of extractions were performed without benefit of preoperative radiographs[135].

Dentists who perform extractions without preoperative radiographs are practicing below accepted professional standards and are engaging in clinically reckless behavior (*see*, ¶I C (5), *supra*). Dr. King knew or, had he exercised reasonable care and due diligence, would have known, that the Tutwiler dental program rarely used radiographs because he was the approval authority for the purchase of all supplies – to include radiographic film[136] [Dunn(Corizon)_10178]. Moreover, he testified that he "sometimes" reviews the Day Sheets at his site visits at various prisons "to see that they're [the dentists] maintaining an adequate patient load and performing like they should at that site." [King Dep. 159:1-21].

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[133] "… we ***now*** will be tasked to take radiographs pre-operatively for all teeth to be extracted. We will also take panoramic radiographs at the intake sites upon intake." [CDAA Radiographic Policy at ¶ III (Dunn(Corizon)_10253 (emphasis added))]. I saw no evidence that panoramic radiographs were taken at Tutwiler and Kilby (the intake sites) on my visits.

[134] These facilities perform approximately 80% of ADOC's intake examinations.

[135] While Tutwiler is an egregious example of this reckless practice, other prisons might have been doing this to varying extents – especially before the revised Radiographic Policy was implemented 10/10/2014.

[136] "The dental supplies are purchased by and [are] property of Corizon. ***Dental supplies must first be approved by the President of CDAA***. Corizon will support this process by purchasing and obtaining the approved supplies" [CDAA Dental Resources Binder (Dunn(Corizon)_10178 (emphasis added))].

Table 3. Radiographs, Extractions and Fillings Performed at Reception Centers and Systemwide, 2011 – 2014[137]			
	Reception Center		
	Kilby	**Tutwiler**	**All ADOC Prisons**
10/2011 to 9/2012	(ADOC040781)	(ADOC040801)	(ADOC040741)
Dental x-rays	1,181	52	9,960
Extractions	817	885	9,828
Fillings	213	1,551	5,715
10/2012 to 9/2013	(ADOC042054)	(ADOC042074)	(ADOC042014)
Dental x-rays	598	36	8,383
Extractions	377	901	9,788
Fillings	50	975	4,156
10/2013 to 9/2014	(ADOC043376)	(ADOC043396)	(ADOC043336)
Dental x-rays	732	25	7,261
Extractions	403	637	8,347
Fillings	76	697	3,732

6. Inadequate Treatment of Chewing Difficulty

CDAA Prosthetics Protocol specifies that all extractions (and healing) and restorations in both arches must be completed before any prosthodontic impressions are made because "[i]t is ethical and medically necessary to insure healthy oral conditions prevail before adding foreign material (prostheses) to a compromised mouth, periodontium and teeth" [CDAA Prosthetics Protocol ¶B at Dunn(Corizon)_10202]. Given the inadequate diagnosis and treatment of periodontal disease and the inadequate use of x-rays for diagnosis it is likely that many removable partial dentures have being made on compromised mouths, CDAA policy notwithstanding.

F. Inadequate Program Monitoring

It is my opinion, based on a reasonable degree of dental certainty, that monitoring of the dental program is inadequate because (1) the ADOC audits most programs infrequently or not at all, (2) the auditors are not dentists; (3) important clinical elements are not audited, (4) Dr. King's monitoring of the Dental Directors is inadequate, and (5) Corizon's monitoring of the CDAA is inadequate.

As a result of all of these factors, the ADOC is either unaware of or condones practices that result in inadequate and untimely care. Without effective monitoring, inmates are put at a substantial risk of serious harm including

[137] More recent data not available.

gratuitous pain, and preventable tooth loss risk of serious injury. While each prison dental director is responsible for monitoring the quality of the local dental program, Dr. King, the CDAA President (and Corizon Regional Dental Director), has apparently condoned and is therefore responsible for the deficiencies I report.

1. Monitoring Dental Directors

Dr. King testified that he performs peer reviews of the site dentists on the anniversary of their hiring, and to the best of his knowledge, no dentists were disciplined of terminated based on the reviews [King Dep.52:19-53:19]. Furthermore, he cannot think of any time he made a criticism of a dentist in connection with a peer review [*id*. 54:6-9] or felt that the dentist was not performing clinically as he should [*Id*. 55:5-9].

The Corizon Dental Peer Review Form addresses 17 elements, among which are compliance with facility policy with respect to "dental process;" initial oral screening and dental sick call; proper documentation in the dental chart; documenting a "plan of care" (treatment plan); and the use of dental x-rays when they are clinically indicated.

Dr. King testified that he was not familiar with the individual institutions' Oral Care policies, "[b]ut I could say that I've seen most of them at one point of time or another". While it is his understanding that each site has specific policies that may relate to oral care, as Regional Dental Director, he has no input into those policies [King Dep. 127:7-128:132:15].

The CDAA Radiographic Policy required that, as of October 10, 2014, all clinics will keep a Dental X-ray Log [Dunn(Corizon)_10253]. However, when asked to produce them, Defendants were only able to produce the logs for seven prisons (*see* ¶ IV E(4)(c)). That non-compliance with CDAA policy could be so widespread, is consistent with a pattern of grossly inadequate monitoring on the part of Dr. King and Corizon.

Table 3 (*supra*) shows that from 2011 through 2014 dentists at Tutwiler rarely viewed preoperative radiographs when extracting teeth, a practice that is clinically reckless. Yet Dr. King found no reason to criticize the Dental Director, Dr. Ward. For example, Dr. Ward's 7/31/2013 Re-Credentialing Peer Review Summary rates him as good or excellent in all categories [Dunn(Corizon)_0255175-176]. Apparently, Dr. King did not deem Dr. Ward's practice of dentistry almost exclusively without radiographs to be sufficiently important to warrant correction or turned a blind eye to the deficiencies of the Tutwiler dental program.

2. Monitoring the Dental Subcontractor

Dr. King's performance is evaluated by Dr. Hood, the Corizon Regional Medical Director (a physician who was trained as a dentist). I reviewed the 9/1/2015 Re-Credentialing Review Summary of Dr. King's clinical performance[138] and he was rated excellent in all respects.

[138] The dimensions of the evaluation are: Clinical (basic medical knowledge, professional judgment, clinical competence, appropriate use of clinical resources, use of consultations, and availability / responsiveness); Personal (sense of responsibility, ethical conduct, and ability to work with others); and Administrative (timeliness of medical records, legibility, and participation in medical staff activities). These are topic areas rather than specific questions that a proper peer review should answer.

While the peer review addressed his clinical performance, there appears to be no formal review of CDAA's dental program for which Dr. King is responsible; and as the result, the serious problems I reported were not identified. Since there is no dentist employed by ADOC to monitor the Corizon dental program, ADOC has defaulted clinical oversight to its contractor. This has redounded to the prisoners' detriment [Dunn(Corizon)_0255031-Dunn(Corizon)_0255033].

3. Monitoring Corizon

The ADOC Office of Health Services personnel perform audits at the prisons based of the audit tool described in ¶ IV B(2), *supra*. The dental audits performed between 2011 and 2015 are summarized in Table 4.[139] The ADOC audit program is desultory at best.[140] Several dental programs (Bullock, Limestone, Staton, and Tutwiler) were not audited at all and several (Easterling, Holman, St. Clair, and Ventress were audited only once during the four-year period. Finally, only three programs (Bibb, Donaldson, and Ventress) were audited in 2015. The validity of the audits notwithstanding[141], ADOC's record auditing the dental program suggests an indifference to monitoring the performance of its vendor, Corizon. The breakdown in clinical monitoring redounds to the detriment of the prisoners because inadequate care cannot be identified and corrected, and consequently is allowed to persist.

[139]According to Defendants, Plaintiffs have received the complete dental audits for the periods requested. Dunn(Corizon)_ 44838-44839" [Letter from William Lunsford to Miriam Haskell dated June 3, 2016].

[140] Since an audit schedule was not produced with the audits, I assume that one does not exist. The absence of such a schedule combined with the haphazard set of audits summarized in Table 4 is consistent with ADOC's simply 'going through the motions' of holding Corizon responsible for providing adequate care to its prisoners.

[141] *See* ¶ IV B(2), *supra* for my critique of the audit questions.

Table 4. ADOC Dental Services Audits, 2011-2015			
Prison	**Date**	**Score**	**Page (s)**
Bibb	3/11/11	78.4%	ADOC045251-254
	6/28/11	73.3%	ADOC045201-204
	5/2/12	*	ADOC0220384
	1/18/13	97.4%	ADOC0220383-5
	1/15/15	94.0	ADOC0220382
	6/19/15	*	ADOC0220381
Bullock	**		
Donaldson	12/3/12	94.0	ADOC0220379
	1/23/13	59.0	ADOC0220378
	2/11/14	100	ADOC0220375-76
	8/12/14	100	ADOC0220377
	2/26/15	100	ADOC0220374
	4/30/15	100	ADOC0220373
Easterling	10/22/14	100	ADOC045562-64
Fountain	2/9/11	78.8	ADOC045654-57
	5/24/11	97.4	ADOC045631-34
Holman	12/18/13	100	ADOC045880-82
Kilby	2/24/11	65.9	ADOC045934-37
	6/14/11	94.7	ADOC045982-85
Limestone	**		
St. Clair	11/22/11	87.5	ADOC046098-101
Staton	**		
Tutwiler	**		
Ventress	2/11/15	97.4	ADOC0220385

* Score not computed
** Program not audited

4. Summary

The ADOC's audits of Corizon's / CDAA's dental program are haphazard and substantively deficient. First, the audits omit institutions and are inconsistent – even for most of the institutions audited. Second, since the auditors are not dentists, the areas audited are limited to those that do not require dental expertise. Moreover, the evaluation of the dental program performed by Corizon and / CDAA is also inadequate. The result is to deprive the ADOC of the most important clinical outcomes data and force them to rely on representations of Corizon and CDAA to determine the extent to which the vendors are in compliance with the contract. These failures redound to prisoners' detriment and subject prisoners to substantial risk of serious harm.

V. CONCLUSIONS

For the reasons described in this report, the dental care provided to ADOC prisoners suffers from systemic deficiencies that subject all prisoners to substantial risk of harm/injury. Furthermore, these deficiencies are amenable to common remedies (e.g., increasing dental staffing and re-writing policies and procedures) that will reduce the risk of harm to inmates.

VI. STATEMENT OF COMPENSATION

My fee schedule is as follows:

Travel - $150 / hour

File review (on or off-site), research, report writing, telephonic and on-site consultation, trial or deposition preparation - $300 / hour

Deposition / trial - $500 / hour

Out-of-pocket expenses (*e.g.*, travel, meals, postage, and mailing) reimbursed as costs

I have to date worked 327.25 hours (at a cost of $ 98,175.00) and incurred 52.25 hours in travel (at a cost of 7,837.50) for a total of $106,012.50.

EXHIBIT A

CURRICULUM VITAE - JAY D. SHULMAN

PERSONAL INFORMATION

Address: 9647 Hilldale Drive
Dallas, Texas 75231
E-mail: jayshulman@sbcglobal.net

EDUCATION

1982 Master of Science in Public Health
University of North Carolina

1979 Master of Arts (Education and Human Development)
George Washington University

1971 Doctor of Dental Medicine
University of Pennsylvania

1967 Bachelor of Arts (Biology)
New York University

POSITIONS HELD

Academic

2007 – Adjunct Professor, Department of Periodontics
Baylor College of Dentistry

2003 - 07 Professor (Tenure), Department of Public Health Sciences
Baylor College of Dentistry (retired October, 2007)

1993 - 03 Associate Professor, Department of Public Health Sciences
Baylor College of Dentistry

Military

1971 - 93 Active duty, U.S. Army. Retired July, 1993 in grade of Colonel.

1990 - 93 Chief, Dental Studies Division & Interim Commander (1993),
US Army Health Care Studies and Clinical Investigation Activity

Directed Army Dental Corps' oral epidemiologic and health services research. Supervised a team of public health dentists, statisticians, and management analysts. Designed and conducted research in oral epidemiology, healthcare management and policy.

1987 - 90 Director, Dental Services Giessen (Germany) Military Community and Commander, 86th Medical Detachment. Dental Public Health Consultant, US Army 7th Medical Command.

Directed dental care for Army in North Central Germany. Operated 6 clinics with 20 dentists and 60 ancillary personnel. Responsible for the dental health of 25,000 soldiers and family members and for providing dental services during wartime using portable equipment. Provided technical supervision of dental public health and oral disease prevention programs for the Army in Europe.

1984 - 87 Chief, Dental Studies Division US Army Health Care Studies & Clinical Investigation Activity. Public Health & Dental Public Health Consultant to Army Surgeon General.

Directed Army Corps' oral epidemiologic and health services research. Supervised a multi-disciplinary team of public health dentists, statisticians, and management analysts. Designed and conducted research in oral epidemiology, healthcare management and policy. Exercised technical supervision of all Army public health and preventive dentistry programs worldwide.

1982 - 84 Assistant Director for Research, US Army Institute of Dental Research.

Responsible for Management of extramural research program, performing epidemiologic research, and teaching biostatistics and epidemiology to Walter Reed Army Medical Center dental residents.

1980 - 82 Full-time graduate student (Army Dental Public Health Training Fellowship) at the School for Public Health, University of North Carolina at Chapel Hill.

1976 - 80 Director, Dental Automation
US Army Tri-Service Medical Information Systems Agency
Walter Reed Army Medical Center, Washington, DC

Directed a team of computer scientists in the development of an automated management system for the Army dental clinics and upper management.

1975 - 76 Clinical Dentist, Pentagon Dental Clinic, Washington, DC

1974 - 75 Clinical Dentist, US Army Hospital Okinawa, Japan

1971 - 74 Clinical Dentist, US Army Dental, Clinic Fort McPherson, Georgia

BOARD CERTIFICATION AND STATE LICENSE

Dental Licensure.

Texas #17518 (retired in good standing).

Board Certification.

Certified by the American Board of Dental Public Health since 1984 (active).

RESEARCH - AREAS OF INTEREST

Oral epidemiology, health services research, health policy, military and correctional health.

RECENT FUNDED RESEARCH

2010 - 12 Instrument system and technique for minimally invasive periodontal surgery (MIS). National Institutes of Health SBIR Grant 2R44DE017829-02A1 ($368,270). Principal Investigator: Dr. Stephen Harrel. Role: Paid consultant.

CURRENT SOCIETY AND ORGANIZATION MEMBERSHIPS

1982 – American Association of Public Health Dentistry

PROFESSIONAL ACTIVITIES

Invited Presentations.

Nov 2015 Panelist, “Challenges of Medical, Mental Health and Dental Care Delivery in Prisons”. Ninth Circuit Corrections Summit. Sacramento, California, November 4, 2015.

Oct 2015 Public Health, Public Policy, And Legal Issues Associated with Health Care in Prisons: A Dental Perspective. National Commission on Correctional Health Care Annual Conference. October 20, 2015.

Apr 2012 Public Health, Public Policy, And Legal Issues Associated with Health Care in Prisons: A Dental Perspective. Presented at the University of Texas Health Science Center, San Antonio.

Apr 2009 Public Health, Public Policy, And Legal Issues Associated with Health Care in Prisons: A Dental Perspective. Presented at the University of Iowa.

Mar 2008 Public Health and Public Policy Issues Related to Dental Care in Prisons. Presented at University of North Carolina School of Public Health, Chapel Hill, NC.

Jun 2007 Characteristics of Dental Care Systems of State Departments of Corrections. Presented to annual meeting of Federal Bureau of Prisons dentists, Norman OK.

Jun 2006 Public Health Aspects of Correctional Dentistry. Presented to annual meeting of Federal Bureau of Prisons dentists, Fort Worth, TX.

Oct 2006 Opportunities for Dental Research Using the National Health and Nutrition Examination Survey. Indiana University School of Dentistry.

Aug 2006 Dental Public Health and Legal Issues Associated with Correctional Dentistry. Federal Bureau of Prisons.

Dec 2005 Opportunities for Faculty Research Using Secondary Data. Frontiers in Dentistry Lecture. University of the Pacific School of Dentistry.

Feb 2005 Advanced Education in Dental Public Health. University of Missouri, Kansas City, School of Dentistry.

Consultant Activities

2015 – Consultant, Santa Clara County Counsel (jail dental care).

2015 – Expert witness. *Aaron Marshal v. Wexford Health Sources, Inc*. 14-722-SMY-SCW (S.D. Illinois). Prison dental care. Testified at deposition March 4, 2016.

2015 – Expert witness. *Robert Johannes v. Daniel H. Heyns et al*. 14-cv-1169 (E.D. Michigan). Prison conditions class action.

2015 – Expert witness. *Joshua Dunn et al. v. Kim Thomas et al*. 2:14-cv-00601. (M.D. Alabama). Prison conditions class action.

2015 - 16 Expert witness. *Henry Leonard et al. v. James LeBlanc, et al*. 5:13-cv-02717 (W.D. Louisiana). Prison conditions class action. Settled April, 2016.

2014 -15 Consultant to U.S. Department of Justice, Civil Rights Division in an investigation of prison health care under the *Civil Rights of Institutionalized Persons Act*.

2014 - 15 Expert witness. *Richard M. Smego v. Jacqueline Mitchell*. 08 CV 03142. (C.D. Illinois). Deposed January 30, 2015. Testified at jury trial February 27, 2015. Civil detainee dental care.

2012 – Expert witness. *John Smentek et al. v. Thomas Dart, Sheriff of Cook County et al*. 1:09-cv-00529 (N.D. Illinois). Testified at injunction trial June 2-3, 2014. Jail conditions class action.

2012 - 15 Consultant. *Quentin Hall et al. v. Margaret Mimms, Sheriff of Fresno County et al*. 1:11-cv-02047-LJO-BAM (E.D. California). Jail conditions class action.

2012 – 14 Expert witness. *Parsons et al. v. Ryan et al*. 2:12-cv-00601-NVW (D. Arizona). Deposed March 20, 2014 and September 23, 2014. Settled October 14, 2014. Prison conditions class action.

2012 - 14 Expert witness. *Daryl Farmer v. Gwendolyn Miles, et al.* 10-cv-05055 (N.D. Illinois), Eastern Division. Deposed February 1, 2013. Settled November 25, 2014. Prison dental care.

2009 - 11 Expert witness. Inmates of the *Northumberland County Prison, et al. v. Ralph Reish, et al*. 08-CV-345 (M.D. Pennsylvania). Settled February 18, 2011. Jail conditions class action.

2007 - 09 Expert witness. *Flynn v. Doyle* 06-C-537-RTR (E.D. Wisconsin) Deposed June 5, 2008. Settled August 16, 2010. Prison conditions class action.

2006 - 12 Rule 706 Expert (monitor) and Court Representative, *Perez v. Tilton* (*Perez v. Cate*) federal class action lawsuit settlement. C05-5241 JSW (N.D. California). Prison conditions class action.

Responsible to *Perez* Court for coordinating remedies between dental (*Perez v. Tilton / Cate*), medical (*Plata v. Schwarzenegger*), *Americans with Disabilities Act* (*Armstrong* v. *Schwarzenegger*) and mental health (*Coleman v. Schwarzenegger*) cases. Monitored compliance with *Perez* stipulated injunction. Monitoring completed June 2012.

2006 National Institute for Dental and Craniofacial Research Special Emphasis Panel -- PAR 04-091 "NIDCR Small Research Grants for Data Analysis and Statistical Methodology

2005 - 10 Rule 706 Expert (monitor), *Fussell v. Wilkinson* federal class action lawsuit settlement. 1:03-cv-00704-SSB (S.D. Ohio). Prison conditions class action.

Performed initial fact finding, provided dental input to stipulated injunction, wrote policies and procedures, and monitored compliance. Monitoring completed October 2010.

2000 - 06 Predoctoral Consultant to American Dental Association Commission on Dental Accreditation

2000 - 06 Postdoctoral Consultant: Advanced Education (Dental Public Health) American Dental Association Commission on Dental Accreditation

1999 - 03 Editorial Board *Journal of Public Health Dentistry*

1997 Reviewer (primary), Total Fluoride Intake, Centers for Disease Control Fluoride Recommendations Workshop

1996 - 05 Editorial Board, Mosby's Dental Drug Reference

1995 - 97 Consultant, Fluoride Steering Subcommittee, Oral Health Coordinating Committee, US Department of Health and Human Services

1993 – *Ad hoc* reviewer: Journal of Public Health Dentistry (10); Journal of American Dental Association (7); Journal of Dental Education (3); Pediatrics (1); Community Dentistry and Oral Epidemiology (3); Cleft Palate Craniofacial Journal (3); Pediatrics International (3); Journal of Dental Research (2); Caries Research (4); Oral

Diseases (2); Journal of Oral Rehabilitation (2); British Dental Journal (5).

Teaching

Predoctoral

1993 - 2007	Director, Principles of Biostatistics
1993 - 2007	Lecturer, Applied Preventive Dentistry
1993 - 2007	Clinical Supervisor, Preventive Dentistry
2006 - 2007	Clinical Supervisor and Care Provider, Dallas County Juvenile Detention Center Dental Clinic
1993 - 2005	Director, Epidemiology & Prevention
1995 - 2003	Director, Dental Public Health

Postdoctoral

2007 –	Research mentor, Department of Periodontics, Baylor College of Dentistry
1994 - 2007	Director, Dental Public Health Residency
1994 - 2007	Lecturer, Research Methods
2001 - 2006	Director, Applied Biostatistics

PUBLICATIONS

Peer-Reviewed (57)

Published

1. Harrel SK, Abraham CM, Rivera-Hidalgo F, Shulman JD, Nunn ME. Videoscope- assisted minimally invasive periodontal surgery: One-year outcome and patient morbidity. *International Journal of Periodontics & Restorative Dentistry* 36 (3); 2016.
2. Harrel SK, Abraham CM, Rivera-Hidalgo F, Shulman JD, Nunn ME. Videoscope-assisted minimally invasive periodontal surgery (V-MIS). *Journal of Clinical Periodontology* 2014; 41 (9):900-7.
3. Bansal R, Bolin KA, Abdellatif HM, Shulman JD. Knowledge, attitude and use of fluorides among dentists in Texas. *Journal of Contemporary Dental Practice* 2012;13(3):371-375.
4. Shulman JD, Sauter DT. Treatment of odontogenic pain in a correctional setting. *Journal of Correctional Health Care* (2012) 18:1, 58 - 65.
5. Barker TS, Cueva MA, Rivera-Hidalgo F, Beach MM, Rossman JA, Kerns DG, Crump TB, Shulman JD. A comparative study of root coverage using two different acellular dermal matrix products. *Journal of Periodontology* (2010) 81:11, 1596-1603.

6. Maupomé G, Shulman JD, Medina-Solis CE, Ladeinde O. Is there a relationship between asthma and dental caries? A critical review of the literature. *Journal of the American Dental Association* 2010;141(9):1061-1074.

7. Puttaiah R, Shulman JD, Youngblood D, Bedi R, Tse E, Shetty S, Almas K, Du M. Sample infection control needs assessment survey data from eight countries. *Indian Dental Journal* 2009; 59, 271-276.

8. Fransen JN, He J, Glickman GN, Rios A, Shulman JD, Honeyman A. Comparative assessment of ActiV GP/glass ionomer sealer, Resilon/Epiphany, and Gutta-Percha/AH Plus Obturation: A Bacterial Leakage Study. *Journal of Endodontics* 2008; 34(6), 725-27.

9. Beach MM, Shulman JD, Johns G, Paas J. Assessing the viability of the independent practice of dental hygiene. *Journal of Public Health Dentistry 2007;*67(4):250-4.

10. Blackwelder A, Shulman JD. Texas dentists' attitudes towards the dental Medicaid program. *Pediatric Dentistry* 2007; 29:40-4.

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12. Shulman JD, Carpenter WM. Prevalence and risk factors associated with geographic tongue among US adults. *Oral Dis*eases 2006;12:381-386.

13. Clark DC, Shulman JD, Maupomé G, Levy SM. Changes in dental fluorosis following cessation of water fluoridation. *Community Dent & Oral Epidemiology* 2006;34: 197-204.

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15. Holyfield LJ, Bolin KA, Rankin KV, Shulman JD, Jones DL, Eden BD. Use of computer technology to modify objective structured clinical examinations. *Journal of Dental Education* 2005;10:1133-1136.

16. Benson BW, Shulman JD. Inclusion of tobacco exposure as a predictive factor for decreased bone mineral content. *Nicotine & Tobacco Research* 2005;719-724.

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18. Shulman JD. Is there an association between low birth weight and caries in the primary dentition? *Caries Research* 2005;39:161-167.

19. Shulman JD. The prevalence of oral mucosal lesions in U.S. children and youth. *International Journal of Pediatric Dentistry* 2005;15:89-97.

20. Bolin KA, Shulman JD. Nationwide dentist survey of salaries, retention issues, and work environment perceptions in community health centers. *Journal of the American Dental Association* 2005;136 (2): 214-220.

21. Shulman JD. Recurrent herpes labialis in US children and youth. *Community Dentistry & Oral Epidemiology* 2004; 32: 402-9.

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23. Shulman JD, Beach MM, Rivera-Hidalgo F. The prevalence of oral mucosal lesions in U.S. Adults: Data from the Third National Health and Nutrition Examination Survey. *Journal of the American Dental Association* 2004;135:1279-86.

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25. Shulman JD, Maupomé G, Clark DC, Levy SM. Perceptions of tooth color and dental fluorosis among parents, dentists, and children. *Journal of the American Dental Association* 2004;135(5):595-604.

26. Rivera-Hidalgo F, Shulman JD, Beach MM. The association of tobacco and other factors with recurrent aphthous stomatitis. *Oral Diseases* 2004;10:335-345.

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33. Shulman JD, Taylor SE, Nunn ME. The association between asthma and dental caries in children and adolescents: A population-based case-control study. *Caries Research* 2001; 35:4:240-246.

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35. Trautmann G, Gutmann JL, Nunn ME, Witherspoon DE, Shulman JD. Restoring teeth that are endodontically treated through existing crowns. Part I: Survey of pulpal status on access. *Quintessence International* 2000; 31(10):713-18.

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41. Cederberg RA, Fredricksen NL, Benson BW, Shulman JD. Effect of different lighting conditions on diagnostic performance of digital film images. *Dentomaxillofacial Radiology* 1998; 27:293-97.

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Book Chapters, Monographs, and Non-Peer Reviewed Articles

In Press

Shulman JD, Makrides NS, Lockhart A (2016). The Organization of a Correctional Dental Program. In Cohen F. (Ed.), Correctional Health Care: Practice, Administration, and Law (pp. TBD). Kingston, NJ: Civic Research Institute.

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1. Shulman JD, Makrides NS, Lockhart A (2016). The Organization of a Correctional Dental Program. *Correctional Health Care Reporter* 16(4) May-June 2015.
2. Shulman JD. Structural Reform Litigation in Prison Dental Care: The *Perez* Case. *Correctional Law Reporter* 25(2) August-September 2013.
3. Shulman JD, Gonzales CK. Epidemiology of Oral Cancer. In Cappelli DP, Mosley C, eds. Prevention in Clinical Oral Health Care. Elsevier (2008), 27-43.
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6. Shulman JD, Heng C. Meth Mouth: What We Know and What We Don't Know. *Fortune News* 2006;52(1):12-13.
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9. Shulman JD, Lalumandier JA, Amstutz, RD, Williams TR, Truesdell P. The Impact of Recent Federal Administrative Rules on Army Dental Care. Volume 1. A Cost Analysis of Bloodborne Pathogens: A Report of Consultation. US Army Directorate of Health Care Studies and Clinical Investigation. #CR-93-001. December, 1992.
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Abstracts Presented (25)

1. Yanus M, Rivera-Hidalgo F, Solomon E, Roshan S, Shulman J, Rees TD, Hummel S, Boluri A. Relationship of Candida to Oral Factors in Complete Denture Wearers. *J Dent Res 89* (Special Issue):#4445, 2010.
2. Abraham C, Rivera-Hidalgo F, Kessler H, Rees T, SL Cheng, Y, Shulman J, Solomon E. Inter-Examiner Evaluation of Fluorescence in Oral Lesions. *J Dent Res 89* (Special Issue): #4404, 2010.
3. He J, Solomon E, Shulman J, Rivera-Hidalgo F. Treatment Outcome of Endodontic Therapy with or without Patency Filing. *J Dent Res 89* (Special Issue):#1277, 2010.
4. Harrel SK, Rivera-Hidalgo F, Hamilton K, Shulman JD. Comparison of Ultrasonic Scaling Wear and Roughness Produced In Vitro. *J Dent Res* 87 (Special Issue): # 1018, 2008.
5. Harrel SK, Rivera-Hidalgo F,' Shulman JD. Comparison of Surgical Instrumentation Systems for Minimally Invasive Periodontal Surgery. *J Dent Res* 87 (Special Issue): # 1020, 2008.
6. Shulman JD, Bolin KA. Characterizing Disparities in Root Surface Caries in the US. *J Dent Res* 85 (Special Issue): # 476, 2006.
7. Shulman JD, Bolin KA. Is Root Surface Caries Associated with Xerogenic Medications? *J Dent Res* 85 (Special Issue): # 477, 2006.

8. Shulman JD, Carpenter WM. Risk Factors Associated with Geographic Tongue among US Children. *J Dent Res* 85 (Special Issue): # 1205, 2006.
9. Shulman JD, Bolin KA, Eden BD. Socio-demographic Factors Associated with Root Surface Caries Prevalence. *J Dent Res* 84 (Special Issue): # 3279, 2005.
10. Shulman JD, Carpenter WM, Rivera-Hidalgo F. Prevalence of Hairy Tongue among US Adults. *J Dent Res* 84 (Special Issue): # 1396, 2005.
11. Eden BD, Shulman JD. Root Caries in the US by Tooth Type and Surface. *J Dent Res* 84 (Special Issue): # 2622, 2005.
12. Mobley CC, Shulman JD. Birth Weight and Caries in the Permanent Dentition of Children. *J Dent Res* 84 (Special Issue): # 86, 2005.
13. Puttaiah R, Shulman JD, Bedi R, Youngblood D, Tse E. Infection Control Profile Scores of Practitioners from Eight Countries. *J Dent Res* 84 (Special Issue): # 1026, 2005.
14. Puttaiah R*,* Youngblood D*,* Shulman JD*,* Bedi R*,* Tse E. Infection Control Practice Comparisons between Practitioners from Eight Countries. *J Dent Res* 84 (Special Issue): # 3207, 2005.
15. Foyle DM, Rivera-Hidalgo F, Shulman JD, Williams F, Hallmon W, Taylor S. Effect of Selected Therapies on Healing in Rat Calvarial Defects. *J Dent Res* 84 (Special Issue): # 1172, 2005.
16. Puttaiah R, Lin SM, Svoboda KKH, Cederberg R, Shulman JD. Quantitative Comparison of Scanning Electron and Laser Confocal Microscopy Techniques. *J Dent Res* 84 (Special Issue): # 3425, 2005.
17. Holyfield LJ, Bolin KA, Rankin KV, Shulman JD, Jones DL, Eden BD. Use of computer technology to modify objective structured clinical examinations. *J Dent Educ* 69 (1):147 # 113, 2005.
18. Benson BW, Shulman JD. Effect of antepartum natural background radiation on infant low birth weight: a pilot study. American Academy of Oral & Maxillofacial Radiology; Denver, CO. 11/6/04.
19. Shulman JD, Beach MM, Rivera-Hidalgo F. Risk factors associated with denture stomatitis in U.S. adults. *J Dent Res* 83 (Special Issue): # 422, 2004.
20. Puttaiah R, Shulman JD, Bedi R. A multi-country survey data on dental infection control KAP. *J Dent Res*; 82 (Spec Issue):# 3394, 2003.
21. Eden BD, Shulman JD. Perceived need for denture care and professional assessment of dentures. *J of Dent Res* 83 (Special Issue): # 1604.
22. Benson BW, Shulman JD. Inclusion of tobacco exposure as a predictive factor for decreased bone mineral content. *Oral Surg, Oral Med, Oral Pathol, Oral Radiol & Endo* 97(2*)*: 266-267.

23. Eden BD, Shulman JD. Factors influencing self-perceived need for periodontal therapy: Data from the Third National Health and Nutrition Survey (NHANES III). *J Dent Res* 2003; 82(Spec Issue):#0481.

24. Shulman JD, Beach MM, Rivera-Hidalgo F. The Prevalence of oral mucosal lesions among US adults: Results from the Third National Health and Nutrition Survey. *J Dent Res* 82 (Special Issue A): # 1472, 2003.

25. Rivera-Hidalgo F, Shulman JD, Beach MM. Recurrence of aphthous ulcerations in adult tobacco smokers. *JDent Res* 82 (Special Issue A): # 0759, 2003.

EXHIBIT B

Court Expert

2006 – 2012. Rule 706 Expert (monitor) and Court Representative, *Perez v. Tilton* (*Perez v. Cate*) federal class action lawsuit settlement. C05-5241 JSW (N.D. CA). Monitoring completed June 2012.

2005 – 2010. Rule 706 Expert (monitor), *Fussell v. Wilkinson* federal class action lawsuit settlement. 1:03-cv-00704-SSB (S.D. OH). Monitoring completed October 2010.

Expert for Plaintiff (s)

2015 – Expert witness. *Aaron Marshal v. Wexford Health Sources, Inc*. 14-722-SMY-SCW (S.D. Illinois). Section 1983 lawsuit involving prison dental care. Testified at deposition March 4, 2016.

2015 – Expert witness. *Robert Johannes v. Daniel H. Heyns et al*. 14-cv-1169 (E.D. Michigan). Statewide class action involving prison dental care.

2015 – 2016. Expert witness. *Henry Leonard et al. v. James LeBlanc, et al*. 5:13-cv-02717 (W.D. Louisiana). Prison conditions class action. Settled April 2016.

2014 – 2015. Expert witness. *Richard M. Smego v. Jacqueline Mitchell*. 08 CV 03142. (C.D. Illinois). Deposed January 30, 2015. Testified at jury trial February 27, 2015. Section 1983 lawsuit involving civil detainee dental care.

2012 – 2014. Expert witness. *Daryl Farmer v. Gwendolyn Miles, et al.* 10-cv-05055 (N.D. Illinois), Eastern Division. Deposed February 1, 2013. Settled November 25, 2014. Prison dental care.

2012 – Expert witness. *John Smentek et al. v. Thomas Dart, Sheriff of Cook County et al*. 1:09-cv-00529 (N.D. Illinois). Testified at injunction trial June 2-3, 2014. Jail conditions class action.

Defendant (s)

2009 – 2011. Expert Witness. *Inmates of the Northumberland County Prison, et al. v. Ralph Reish*, et al. 08-CV-345 (M.D. PA). Wrote expert report but case settled before msj was filed.

EXHIBIT C

REDACTED

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C. External Documents

1. Other Correctional Systems

Arizona Department of Corrections, Division of Health Services. Department Order 1103. Inmate Dental Health Care. January 1, 2010 ("AZ P&P").

August 2010. http://www.cdcr.ca.gov/DCHCS/docs/2010-August-PP.pdf (visited September 16, 2014). ("CDCR P&P").

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2. Scientific Literature

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American Academy of Periodontology. Parameter on Chronic Periodontitis with Advanced Loss of Periodontal Support. *J Periodontol* 2000;71:856-858. ("Advanced Periodontitis").

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American Dental Association. Evaluation: Patient Requiring a Comprehensive Oral Evaluation. http://www.ada.org/en/science-research/dental-practice-parameters/evaluation-patient-requiring-a-comprehensive-oral-evaluation (visited 6/29/2016) ("ADA – Comprehensive Oral Evaluation.").

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American Dental Hygienists' Association. States that Permit Dental Hygienists to Administer Local Anesthesia, 2012 (revised 2015). https://www.adha.org/resources-docs/7521_Local_Anesthesia_by_State.pdf (viewed 5/7/2016) ("ADHA Local Anesthesia").

Brown JP, Dodds MWJ. Dental Caries and Associated Risk Factors. In Cappelli DP, Mosley C, eds. Prevention in Clinical Oral Health Care. Elsevier (2008), 45-55. ("Brown and Dodds")

Burrow, G.F. et al. (2006). Nursing in the Primary Care Setting, in M. Puisis (ed.), *Clinical Practice, in Corr. Med.* (2d ed.). Philadelphia, PA: Mosby Elsevier ("Burrow *et al*., 2006").

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Clare JH (2002). Dental Health Status, Unmet Needs, and Utilization of Services in a Cohort of Adult Felons at Admission and After Three Years Incarceration. *J Correctional Health Care*, 5:1, 89-102. ("Clare 2002").

Clare JH (1998). Survey, Comparison, and Analysis of Caries, Periodontal Pocket Depth, and Urgent Treatment Needs in a Sample of Adult Felon Admissions, 1996. *J Correctional Health Care*, 9:1, 65-76. ("Clare 2002").

Delta Dental of Virginia Clinical Policy # 404 – Scaling and Root Planing. Revised 1/16/2016.
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Corizon Alabama Monthly Client Reports [ADOC039823 – ADOC043532, ADOC0316027 – ADOC0316407]

Day Sheets [ADOC125882 – ADOC129961]

Sick Call Logs [ADOC129962 – ADOC134822, ADOC136272 – ADOC137995]

Dental X-ray Logs [ADOC0320613 – ADOC0320748]

Correspondence between Plaintiffs' counsel and Defendants' counsel related to document production

- May 19, 2016 letter from Miriam Haskell to Bill Lunsford
- June 8, 2016 letter from Miriam Haskell to Bill Lunsford
- June 2, 2016 letter from Stephen Rogers to Miriam Haskell
- June 3, 2016 letter from Bill Lunsford to Miriam Haskell

Audits of dental program [within ADOC0220373 – ADOC0220385, ADOC045134 – ADOC046183, Dunn(Corizon)_44832 – Dunn(Corizon)44862]

Corizon Policies and Procedures (Corizon Manual) [Dunn(Corizon)_00001 – Dunn(Corizon)_00817]

Lists of items available on canteen [ADOC0140277, ADOC0253064 – ADOC0253069]

Credentialing files for dental staff [Babin, Bannon, Corum, Friduss, Holt, King, Kirkendall, Mason, Mendel, Phillips, Ward]

MAC meeting minutes [Dunn(Corizon)_252659 – Dunn(Corizon)_254407]

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Photographs from tours of ADOC prison facilities

OHS Division Manual Policies and Procedures [ADOC000774 – ADOC001117]

Corizon/ADOC contract [ADOC000518 – ADOC000773]

Dental forms [Dunn(Corizon)_10608 – Dunn(Corizon)_10642]

EXHIBIT D

Exhibit D-1. Plaintiffs Diagnosed with Periodontal Disease (N=19)				
Name	**Exam Date**	**Periodontal Condition Identified**	**Periodontal Treatment Planned**	**Page**
Patient 3	4/14/11	Gingivitis	No	MR041954
Patient 4	2/15/12	Gingivitis Chronic periodontitis	No	MR002295
Patient 4	5/3/14	Aggressive periodontitis	Prophy	MR002280
Patient 6	11/11/14	Gingivitis	No	MR021540
Patient 8	10/29/12	Gingivitis	No	MR004863
Patient 9	5/31/12	Gingivitis	No	MR006119
Patient 10	1/25/12 1/11/13	Gingivitis	No	MR006606
Patient 12	8/8/13	Gingivitis	No	MR007703
Patient 13	1/17/13	Gingivitis	No	MR008868
Patient 14	3/16/12	Gingivitis	No	MR009242
Patient 61	1/7/16	Gingivitis	No	MR048744
Patient 75	4/25/16	Gingivitis PSR=3 in all sextants	No	MR048896
Patient 16	8/22/13	Gingivitis	No	MR011181
Patient 19	7/11/13	Gingivitis	No	MR012096
Patient 20	6/3/13	Aggressive periodontitis	Prophy	MR012525
Patient 21	3/2/12	Gingivitis	Yes	MR013612
Patient 23	1/3/12[4]	Chronic periodontitis	No	MR043034
Patient 25	2/15/13 2/7/14	Gingivitis / Chronic periodontitis	No	MR014542
Patient 26	11/3/15	Gingivitis	No	MR049839
Patient 26	1/22/13	PSR=3 in all sextants Gingivitis	Yes	MR015895
Patient 27	12/3/12	Gingivitis	Yes	MR017051

Exhibit D-2. Dental Treatment Plans for Prisoners with Identified Periodontal Problems (N=32)				
Name	**Exam Date**	**Recent x-rays for Exam**	**Periodontal Condition Identified (PSR)**	**Periodontal Treatment Planned**
Patient 39	2/7/14	No	Gingivitis	No
Patient 76	2/5/15	No	(4,3,4/4,4,3)	No
Patient 53	2/26/15	No	(3,3,3/3,3,3)	No
Patient 41	3/16/15	No	Gingivitis (2,2,2/2,2,2)	No
Patient 49	3/31/15	No	(3,2,3/3,2,3)	Prophy
Patient 47	8/2/12	No	Chronic periodontitis	No
Patient 44	4/1/15	No	Gingivitis (2,2,2/2,2,2)	No
Patient 2	12/30/14	No	Gingivitis (2,2,2/2,2,2)	No
Patient 42	6/4/13	No	Gingivitis	No
Patient 29	1/27/16	No	Gingivitis	No
Patient 54	4/7/15	No	Gingivitis; (3,3,3/3,3,3)	No
Patient 32	12/10/12	No	Gingivitis	No
Patient 32	12/19/13	No	Gingivitis	No
Patient 38	2/5/15	No	Gingivitis; (3,3,3/3,3,3)	No
Patient 43	10/21/13	No	Gingivitis	No
Patient 40	4/1/15	No	Gingivitis (2,2,2/2,2,2)	No
Patient 48	1/14/16	No	(2,3,2/3,3,3)	No
Patient 46	12/28/15	No	Gingivitis/Chronic periodontitis	No
Patient 36	1/9/15	No	Gingivitis	No
Patient 34	3/27/15	No	Gingivitis / heavy calculus	No
Patient 30	1/9/15	No	Gingivitis	No
Patient 50	6/13/15	No	Chronic periodontitis (3,3,3/2,2,2)	Prophy
Patient 37	3/27/15	No	Gingivitis	No
Patient 33	5/21/15	No	Gingivitis	No
Patient 35	2/15/13	No	Gingivitis	No
Patient 28	9/4/15	No	Gingivitis	No
Patient 45	11/5/14	No	(x,2,2/2,2,2)	No
Patient 52	2/5/15	No	(3,3,3/3,3,3)	No
Patient 51	5/7/15	No	(3,3,3/3,3,3)	No
Patient 77	11/28/12	No	Gingivitis; chronic periodontitis	Prophy
Patient 31	2/9/16	No	Gingivitis	No
Patient 78	11/18/14	No	(2,2,4/x,2,x)	Prophy

Exhibit D-3. Wait Time for Plaintiffs Submitting HSRFs Stating Pain (N=16)					
Name	**HSRF Date**	**Issue / Page**	**Date Seen by Dentist**	**Encounter Result /Page**	**Days after HSRF**
Patient 3	2/3/2016	Painful wisdom tooth MR046687	2/24/2016	Consent for extraction MR046712	21
Patient 3	9/20/15	Painful wisdom tooth MR046696	11/30/15	No show for dental sick call MR046593	71
Patient 3	6/24/12	Painful tooth MR042333	6/26/12	Extraction MR042349	2
Patient 55	1/28/14	Dentures causing blisters MR001384	5/21/14	Adjust denture MR001500	113
Patient 55	7/23/13	Denture pain – can't eat MR001370-71	11/20/13	Adjust denture MR001498	119
Patient 55	6/11/12	Painful teeth MR001275	6/16/12	Teeth extracted MR001500	5
Patient 55	1/31/12	Toothache MR001348	5/30/12	Extract tooth MR001500	120
Patient 60	1/2/13	Teeth need to be pulled MR001684	7/9/14	Teeth extracted MR001665	249
Patient 5	8/14/12	Bad toothache MR003036	6/25/14	Teeth extracted MR029247	680
Patient 8	9/15/12	Toothache MR004861	9/17/12	Dental appt. MR004862	2
Patient 13	3/21/11	Pain from extraction site MR008865	2/18/11	Treated MR008863	2
Patient 13	3/2/11	Painful tooth MR008856	3/3/11	Dental appt. MR008863	1
Patient 13	1/31/11	Painful tooth MR008860	2/18/11	Tooth filled MR008863	18
Patient 61	12/21/15	Toothache MR048736	1/7/16	Extraction MR048744	17
Patient 61	3/19/14	Toothache MR008963	4/3/14	Extraction MR008997	15
Patient 61	3/24/13	Toothache MR008970	4/22/13	Authorization to extract tooth #1 MR048744	29
Patient 14	12/18/12	Toothache MR009055	12/20/12	Tooth extracted MR009242	2
Patient 75	4/4/16	Painful lost filling MR048867	4/25/16	Tooth extracted MR048895	21
Patient 79	11/21/13	Toothache MR010559	11/22/13	Teeth extracted MR010620	1
Patient 16	11/18/13	Painful cavity MR011010	12/5/13	Filled #31 MR011177	30
Patient 16	11/5/13	Jaw pops when eating MR011013	12/5/13	Dental appt. MR011177	17
Patient 16	5/27/11	Painful cavities MR011040	7/20/12	Tooth filled MR011187	420

Exhibit D-3. Wait Time for Plaintiffs Submitting HSRFs Stating Pain (N=16)					
Name	**HSRF Date**	**Issue / Page**	**Date Seen by Dentist**	**Encounter Result /Page**	**Days after HSRF**
Patient 17	11/27/11	Toothache MR017674	11/17/12	Tooth extracted MR011326	21
Patient 18	8/20/14	Painful tooth MR041101	8/22/14	Tooth extracted MR041101	2
Patient 18	5/29/14	Painful tooth MR011789	5/30/14	Tooth extracted MR011832	1
Patient 18	8/25/13	Sharp tooth cutting cheek MR01180	9/25/13	Extract #4 MR011835	31
Patient 19	2/28/13	Painful bleeding gums MR011950	4/3/13	Adult prophy MR012180	34
Patient 21	4/23/14	Toothache MR013479	4/29/14	Abscess #9 & 10 MR013614	6
Patient 23	3/23/15	Toothache MR043031	3/26/15	Teeth extracted MR043036	3
Patient 23	12/21/11	Toothache MR042763	1/3/12	Tooth extracted MR043036	13

Exhibit D-4. Hygiene Procedures Documented by RDH Vining at Bibb Correctional Facility, July – December, 2014					
Date	**Patients**	**Page**	**Date**	**Patients**	**Page**
7/14/14	4	ADOC125882	???	7	ADOC126025
7/21/14	5	ADOC125883	12/22/14	4	ADOC126026
8/11/14	4	ADOC125917	1/26/15	5	ADOC126047
8/18/14	3	ADOC125918	1/12/15	6	ADOC126048
8/25/14	7	ADOC125916	1/5/15	7	ADOC126049
9/8/14	8	ADOC125936	2/2/15	7	ADOC126053
9/15/14	8	ADOC125947	2/16/15	6	ADOC126063
9/22/14	8	ADOC125952	2/23/15	8	ADOC126069
9/29/14	5	ADOC125956	3/23/15	6	ADOC126077
10/27/14	9	ADOC125978	???	5	ADOC126085
11/3/14	8	ADOC125994	3/9/15	5	ADOC126091
11/10/14	4	ADOC125995	3/16/15	4	ADOC126098
11/17/14	7	ADOC125996	4/6/15	6	ADOC126107
12/2/14	4	ADOC126001	4/13/15	4	ADOC126114
12/9/14	5	ADOC126000	4/20/15	5	ADOC126118
12/19/14	8	ADOC125999			

Exhibit D-5. Hygiene Procedures Documented by RDH Davis at Limestone Correctional Facility, July – December, 2014					
Date	**Patients**	**Page**	**Date**	**Patients**	**Page**
7/3/14	5	ADOC127784	9/29/14	7	ADOC127896
7/10/14	8	ADOC127777	10/2/14	5	ADOC127944
7/11/14	8	ADOC127778	10/7/14	7	ADOC127945
7/17/14	8	ADOC127779	10/16/14	8	ADOC127946
7/18/14	7	ADOC127780	10/17/14	7	ADOC127947
7/23/14	13	ADOC127781	10/24/14	4	ADOC127948
7/24/14	8	ADOC127782	10/30/14	6	ADOC127949
7/31/14	8	ADOC127783	10/31/14	8	ADOC127950
8/1/14	8	ADOC127848	11/6/14	6	ADOC127995
8/7/14	6	ADOC127849	11/7/14	6	ADOC127996
8/8/14	10	ADOC127850	11/13/14	8	ADOC127997
8/15/14	8	ADOC127851	11/14/14	8	ADOC127998
8/21/14	8	ADOC127852	11/20/14	5	ADOC127999
8/22/14	7	ADOC127853	11/20/14	3	ADOC127993
8/28/14	9	ADOC127854	11/21/14	1	ADOC127994
8/29/14	9	ADOC127855	11/21/14	5	ADOC128000
9/4/14	9	ADOC127889	11/24/14	7	ADOC128001
9/4/14	1	ADOC127897	12/3/14	3	ADOC128002
9/8/14	6	ADOC127890	12/4/14	8	ADOC128003
9/9/14	8	ADOC127891	12/11/14	7	ADOC128004
9/14/14	2	ADOC127895	12/12/14	5	ADOC128005
9/18/14	7	ADOC127892	12/18/14	3	ADOC128006
9/19/14	3	ADOC127893	12/19/14	5	ADOC128007
9/25/14	7	ADOC127894	12/29/14	6	ADOC128008
9/25/14	1	ADOC127898			

Exhibit D-6. PSR Scores of ADOC Prisoners (N=79)			
Name	**Sextants with PSR ≥3**	**Name (AIS)**	**Sextants with PSR PSR ≥3**
Patient 80	0	Patient 110	0
Patient 81	1	Patient 40	0
Patient 82	0	Patient 2	0
Patient 76	4	Patient 111	1
Patient 62	1	Patient 50	3
Patient 83	0	Patient 112	0
Patient 49	4	Patient 113	1
Patient 35	0	Patient 114	0
Patient 84	0	Patient 115	6
Patient 85	0	Patient 116	0
Patient 86	0	Patient 117	6
Patient 87	0	Patient 38	6
Patient 37	0	Patient 118	6
Patient 51	6	Patient 119	0
Patient 88	0	Patient 120	0
Patient 89	0	Patient 41	0
Patient 90	0	Patient 44	0
Patient 52	6	Patient 121	0
Patient 45	0	Patient 122	0
Patient 91	0	Patient 123	0
Patient 92	0	Patient 124	0
Patient 19	0	Patient 125	1
Patient 93	0	Patient 126	0
Patient 94	0	Patient 127	0
Patient 95	0	Patient 128	0
Patient 53	6	Patient 129	0
Patient 96	1	Patient 130	1
Patient 97	0	Patient 102	3
Patient 98	0	Patient 131	1
Patient 99	6	Patient 132	0
Patient 100	0	Patient 133	3
Patient 101	0	Patient 134	6
Patient 102	4	Patient 135	0
Patient 103	5	Patient 136	0
Patient 104	0	Patient 137	6
Patient 105	0	Patient 138	2
Patient 106	0	Patient 139	0
Patient 107	0	Patient 140	6
Patient 108	0	Patient 141	0
Patient 109	0	Patient 142	1