Guide for the Conversion of

Analog Health Records

to Digital

Contents

Introduction

The Alberta Dental Association and College had previously advised members that digitizing hard copy patient records such as charts, correspondence, medical history and laboratory prescriptions to allow inclusion into their electronic health record system (EHRs) is an acceptable practice. However, <u>members were expected to maintain the originals until the statutory limitation period has been reached.</u> Currently this is the advice that all other dental regulators in Canada provide to their membership based on the statutory limitation period in that province.

There are a number of acts and regulations pertaining to the retention of patient records. The Alberta Health Information Act establishes defined retention periods of a minimum of 10 years for adults. The Alberta Limitations Act includes further requirements particularly in relation to minors. In Alberta, the statutory limitation period is as follows:

> In respect to patient records for adults they must remain accessible for a minimum period of ten (10) years following the date of last service, and patient records for minors must be accessible for a minimum period of ten (10) years past the patient's age of majority. In the event of a patient becoming deceased, the retention period is not changed.

Dentists must consider a variety of factors when determining the appropriate retention periods for patient records. Legislated requirements are only a minimum. There are many reasons where it is prudent to keep records for longer periods such as in the case of a lost or missing person, health research, litigation, or a member of a family of record who might return home for care from their dentist after a prolonged period of time.

The Alberta Dental Association and College Standard of Practice for Patient Records reflects the minimum legislated requirements.

> The dentist must take reasonable steps to ensure that patient records are accessible for continuity of care for patients. The dentist must determine appropriate retention periods for patient records, considering that patient records for adults must remain accessible for a minimum period of ten (10) years following the date of last service, and patient records for minors must be accessible for a minimum period of ten (10) years past the patient's age of majority. In the event of a patient becoming deceased, the retention period is not changed. The age of majority in Alberta is eighteen (18) years of age

Health records are an integral cornerstone to ensure ongoing delivery of care to our patients. There are numerous advantages from a diagnostic, treatment and maintenance perspective of having patient records in a digital format. In addition, it is recognized that analog records create issues such as increased costs, space requirements, archival stability and retrieval.

Digitization technology has evolved to the point where there is virtually no need for an analog component in terms of patient records from a professional and ethical standpoint. Computer based

charts; digital photography and radiography are now the norm. Today, 3D imaging in the form of cad-cam technology allow for digital impression techniques, design and fabrication of restorations that meet professional standards.

The Alberta Dental Association and College has developed the **Guide for the Conversion of Analog Health Records to Digital** to assist members in meeting the legal, ethical and professional obligations as dental practices transition analog patient records to a digital format for inclusion in electronic health record systems and <u>allows the analog originals to be disposed in most cases</u>.

This Guide is based on similar processes developed by the Canadian Medical Protective Association, the College of Physicians and Surgeons of Alberta and the Alberta Government.

This Guide references the following Alberta Dental Association and College Standards of Practice and Guides:
- Standard of Practice: Patient Records
- Standard of Practice: Privacy and Management of Patient Health Information
- Guide for Patient Records and Informed Consent
- Guide for the Health Information Act: Privacy and Management of Patient Health Information
- Guide for Implementing the Requirements of the Health Information Act
- Guide for Developing Information Privacy and Security Practice Specific Policies

Acknowledgements

The Alberta Dental Association and College acknowledges the valuable contribution of Rita Bauer, University of Toronto and Bauer Seminars Inc. towards the development of this Guide.

Overview

When converting analog patient records to a digital format for inclusion in an electronic health record system or for retention/archival purpose, a written policy and protocol must exist that ensures that the integrity and authenticity is maintained. The digital copy needs to be verified to assure its original quality, content and function is intact to fulfil its ethical, legal and professional roles.

> *QuickPoint:*
>
> *Maintaining two, essentially identical parallel health record systems is not practical, confusing and creates issues for continuity of care. How to transition analog records into electronic health records will be discussed in this document.*

Health records fall into a number of types and categories. However, the steps involved are the same:

1. Ensure that your practice is compliant with the Alberta Dental Association and College Standard of Practice:
   a. Patient Records; and
   b. Privacy and Management of Health Information.
2. Develop a written policy and protocol for the conversion of the analog records to a digital format that is consistent with this Guide;
3. Identify the policy and protocol within Section 13: Records Retention and Disposition in the Guide for Developing Information Privacy and Security Practice Specific Policies;
4. Assess and determine if there is the need for a Privacy Impact Assessment. (In almost all cases a Privacy Impact Assessment would be required unless it is a minor change in protocol related to a previously filed Privacy Impact Assessment.)
5. Set up a schedule for conversion;
6. Prepare records for conversion;
7. Scan or transpose records into a non-editable standard format that clearly documents both the date of the original record and the date of conversion;
8. Verify quality, content and appropriate location within the electronic health record; and
9. Retention or disposal of analog record according to policy.

> *QuickPoint:*
>
> *Once patient records have been converted to a digital format the analog originals may be disposed in most cases in a manner that protects patient confidentiality and maintains physical security of the information.*

Although a dental practice has transitioned to an electronic health record system, there will still exist the need to deal with notes, forms, external reports, records and correspondence that is received or produced in an analog format. It is a misnomer to describe a dental practice as "paperless". Some of the most important information shared or obtained with patients usually requires signatures and customization that may not initially be obtained in a digital format. It is the final document that leaves with the patient or is filled out by the patient that is the source document. How to convert or transpose these documents to the electronic format requires rigid policy and protocol to deal with authenticity and integrity requirements.

Communication with patients, whether written or in electronic format regarding informed consent, treatment and outcomes is part of the permanent patient record (This does not include items such as the routine scheduling of appointments.)

Diagnostic casts/models are also considered part of the permanent patient record along with other records including laboratory prescriptions and invoices must be kept for the prescribe time period.

Working casts/models do not have to be retained for any specific period of time. The decision to keep working casts/models should be based on the complexity of the case and is left up to the judgement of the dentist.

General office records such as daily record of appointments showing the names of patients who received professional services must be kept for a minimum of two years. Dental Claim forms (e.g. Dent 29) should also be kept for a minimum of two years. Other general office records for example; coordination of benefits, claims acknowledgement or payment notification can be discarded after their intended purpose is fulfilled.

At the end of the retention period, records must be disposed of in a manner that protects patient confidentiality and maintains the physical security of information. In most cases, once patient records have been converted to digital format the analog originals may be disposed of. The decision to dispose of patient records rests with the custodian (dentist) as defined under the *Alberta Health Information Act* and the Alberta Dental Association and College *Standard of Practice: Privacy and Management of Patient Health Information*.

Methods of disposal include:
- Confidential return to the individual patient;
- Controlled physical destruction such as shredding or incineration; or
- Confidential transfer to another agency that will provide appropriate services to destroy the information.

The process used to destroy electronic records must render them unreadable and eliminate the possible reconstruction of the record in whole or in part.

Policy Development

Custodians as defined under the *Alberta Health Information Act* must develop and implement policies and protocols before proceeding with the conversion of analog records to an electronic format along with the disposition schedule. These policies and protocols are based on the Alberta Dental Association and College *Code of Ethics*, *Standards of Practice: Patient Records, Standard of Practice: Privacy and Management of Patient Health Information* and legislation from the Government of Alberta including the *Health Information Act*, *Evidence Act* and the *Electronics Records Transaction Act*. <u>The custodian recognizes that conversion protocols must be carefully followed and documented to avoid challenges to the accuracy and completeness of the digital records if they are ever required in a court proceeding.</u> The custodian or affiliates recognize that in the case of professional review the digital copies, once the analogs are disposed of, will be the basis in which unprofessional conduct or unskilled practice will be reviewed.

Steps to Developing a Conversion Policy

Step One
Ensure that your practice is compliant with the overarching Alberta Dental Association and College Standard of Practices:

1. Patient Records; and
2. Privacy and Management of Health Information.

Step Two
Develop an overall written policy and protocol for the conversion of the analog records to a digital format that is consistent with this Guide. (Appendix 1) Identify the policy and protocol within Section 13 Records Retention and Disposition of the [Dental Office] Information Privacy and Security Policies.

Step Three
Develop conversion protocols for each record type. (Appendix 2)

Step Four

Determine if there is a need for a formal Privacy Impact Assessment. In almost all cases, a Privacy Impact Assessment would be required unless it is a minor change in protocol related to a previously filed Privacy Impact Assessment. The Privacy Impact Assessment must be completed, submitted, and accepted by the Office of the Information and Privacy Commissioner and additional requirements if needed are put into the protocol before the proposed project is commenced. The privacy impact assessment will need to identify a variety of issues that include whether the conversion will take place onsite or offsite, are records from a variety of locations being merged, are services being outsourced to private contractors, will the conversion be done remotely through the internet and are storage media such as cloud or offsite being used.

Step Five

Establish an ongoing compliance monitoring, audit and review process to ensure that the protocol and process is adhered to so the integrity and authenticity is maintained. The digital copy needs to be verified to assure its original quality, content and function is intact to fulfil its ethical, legal and professional roles.

Step Six

Implement the developed policy for the Conversion of Analog Health Records to Digital.

Templates for the Conversion of Analog Health Record to Digital are provided in Appendix 1 and 2, to assist dentists in the development of an overall written policy and protocol for the conversion of the analog records to a digital.

The following statement is included in the Guide for Developing Information Privacy and Security Practice Specific Policies Section 13: Records Retention and Disposition.

13.2.2 of the Guide for Developing Information Privacy and Security Practice Specific Policies states:

> The conversion of analog health records to digital and their subsequent destruction will follow the policy and protocol that is included under Appendix 7.

Types of Records

There are three component analog record types:

Existing analog records (e.g. patient charts, film based radiographs and slides, photographs, dental models, correspondence, financial and appointment records);

Ongoing internally generated notes and records (e.g. medical history forms, general and informed consent documentation, patient information/education/post-operative care instructions, pharmaceutical or laboratory prescriptions and referrals) including those that are transitory in nature (e.g. telephone memo, after hour call notes); and

Ongoing externally generated communications (e.g. third party communications such as from insurance companies or those obtained from a dental specialist, another health care provider, laboratory or diagnostic service)

The three above record types have in common the following requirements:

1. Each type of document/report/record that is received or created by a dental practice must have a defined process and destination to either the paper chart or the electronic record, or both.

   There will be some circumstances where the need to maintain the record in the original format is prudent (e.g. legal proceedings such as motor vehicle accident, civil litigation or complaint investigation). The process of conversion to a digital format of an analog record also needs to follow a process that ensures that the integrity and authenticity is maintained. The digital copy needs to be verified to assure its original quality, content and function is intact to fulfil its ethical, legal and professional roles. For this reason two parallel records will exist until the custodian determines the disposition status.

2. For the electronic record to be deemed as the primary patient record, the relevant history from the analog records (whether they are obtained as part of the former paper chart or as part of ongoing practice) must be transferred and/or referenced directly.

   This is done in conjunction with a comprehensive review of the chart (i.e. as part of a recall examination or provision of treatment) and should have a standardized process and content. It is recognized that transposing is an acceptable and sometimes the only feasible way of transferring the transitory data (e.g. telephone memo)*. Chart notes must reference where the scanned/imaged records is maintained.

   > * It would be best practice to maintain copies of transitory records due the ease of scanning, digital transfer and storage within electronic health records.

3. When analog records are converted to digital format the integrity and authenticity must be maintained. The digital copy needs to be verified to assure its original quality, content and function is intact to fulfil its ethical, legal and professional roles. If the record has been transposed as a summary or entered manually, the chart notes must reference where the scanned/imaged record is maintained on file within the electronic health records. It is recognized that the digital copy must fulfill all its former roles.

   The conversion must be done in way that:
   - It is non-editable (read-only), consistent, maintains original quality and date of service and diagnostic relevance;
   - Information regarding the conversion date/time/operator must be documented;
   - The digital copy must conform to all patient record standards before a custodian can consider disposal of the analog source record;
   - The technology used must be such that it meets archival retention conditions with the ability to open/retrieve in the future:
     o Portable Document Format Archival (PDF/A) is the international standard (ISO 19005-1:2005) for records. Patient charts, slides, photographs and radiographs can be converted using scanning technology and as such can be saved in a PDF/A format.
   - Digital Imaging and Communications in Medicine (DICOM) standards are the medical equivalent to the ISO standards. The complexity of 3D imaging or digitally obtained radiographs or photographs may preclude the use of the PDF/A format;
   - Stereolithography (STL), Polygon File Format (PLY) and Object File(OBJ) are all acceptable standards for storage of 3D digital study models:
     o The PLY format was created specifically for 3D scanning;
     o OBJ is an older, more dated format but still in use;
     o STL is very common, but the files are large;
     o Image resolution of 70 microns is suggested; and
   - Joint Photographic Experts Group (JPEG), Tagged Image File Format (TIFF) and Bitmap (BMP) are all appropriate formats for long term storage and retrieval of digitally scanned radiographs and photographs provided they are in a non-editable (read only) version.

4. There are a variety of circumstances where it will be necessary to maintain a parallel record that is either analog based or within a former electronic health record:

   - There are issues such as compatibility with a new system and lack of ability/capacity to transpose/transfer all the information;
   - Where there is a concern about potential or ongoing legal issues or actions, maintaining original source records in a parallel system is necessary. (e.g. motor vehicle accident, crime, workplace accident, dissatisfied patient); and

   NOTE: The location of such information needs to be referenced within the electronic health records in terms of its location, content and be able to be retrieved.

5. The disposition of analog records once converted to the prescribed digital format can only be authorized by the custodian and must follow all Alberta Dental Association and College Standards of Practice and Government of Alberta Legislation; and

6. The custodian must determine whether additional requirement such as a Privacy Impact Assessment will be required as part of the conversion of analog health records to digital. In most cases a Privacy Impact Assessment must be completed, submitted, and accepted by the Office of the Information and Privacy Commissioner before the proposed project is implemented*. The one exception would be if there is a previous Privacy Impact Assessment that included the conversion of analog records to digital. The custodian may decide that a minor change to the policy or protocol previously adopted is required. The custodian must assess whether this would trigger a resubmission. It is always prudent if unsure to file an amended Privacy Impact Assessment.

> * In almost all cases a Privacy Impact Assessment would be required unless it is a minor change in policy or protocol related to a previously filed Privacy Impact Assessment. The Privacy Impact Assessment must be completed, submitted, and accepted by the Office of the Information and Privacy Commissioner and additional requirements if needed are put into the protocol before the proposed project is commenced. The privacy impact assessment will need to identify a variety of issues that include whether the conversion will take place onsite or offsite, are records from a variety of locations being merged, are services being outsourced to private contractors, will the conversion be done remotely through the internet and are storage media such as cloud or offsite being used.

Preparation and Assessment

> *QuickPoint:*
>
> *Information can be electronically transferred, imaged, scanned or digitally photographed depending on the nature of the record in a non-editable format. The digital copies must maintain all their original diagnostic quality and properties.*

Type and nature of the source records assessment
- Ongoing transitory (e.g. telephone memos, after hour call notes);
- Ongoing in-office analog captured information (e.g. medical history forms, general and informed consent documentation, patient information/education/post-operative care instructions, pharmaceutical or laboratory prescriptions and referrals);
- Ongoing external analog captured information (e.g. communication from third parties or health care professionals, letters or emails from patients, diagnostic/laboratory reports); and
- Pre-existing patient records (e.g. paper based charts, appointment/financial/third party insurance files, communication including letters/emails, film based media such as radiographs and slides, photographs, dental models)

Transfer into the electronic health record system
- Summary information can be transposed into the electronic health records and in most cases the source record must be maintained in a digital format within the electronic health records;
- Information can be electronically transferred, imaged, scanned or digitally photographed depending on the nature of the record in a non-editable format:
  - Paper based records and photographs – scanned/digitally photographed and maintained as PDF/A , JPEG, TIFF and BMP read only or DICOM standard;
  - Slides and radiographs – scanned/digitally photographed and maintained as PDF/A, JPEG, TIFF and BMP read only or DICOM standard; and
  - Dental models and impressions 3D scanned as DICOM standard PLY , STL or OBJ;
- In all cases the record type/image technique/date/identity of party transferring must be noted in the electronic health records;
- The imaged records must be cross referenced, assessable and retrievable within the ongoing electronic health records; and
- The digital copies must maintain all their original diagnostic quality and properties*.

> *For example digitally photographing dental models is not acceptable as the original diagnostic quality and properties are not maintained; black and white scanned documents may not contain all the information if entries were made in different colors in the source document; similarly scanning of transparencies (radiographs) without high enough resolution and quality control often leads to unacceptable copies.

Location and logistics of data transfer
- The project can occur on or off site including remote electronic access;
- It can be a phased or rapid process;
- In-house or external support staff/contractors may be used;
- High resolution scanners and technology may be required to support PDF/A, JPEG, TIFF and BMP read only and DICOM standards that may not be available within the practice;
- There will be ongoing need for in-house or external support;
- The risk to confidentiality and security of the health information increase as external contractors/support and offsite locations are used; and
- Custodians must manage the privacy issues and ensure they are fulfilling their obligations under the *Health Information Act* including the possible need of a Privacy Impact Assessment.

Capture, Authenticity, Integrity, Quality, Function and Retrievability Verification
- Prior to any disposition of the analog record, the custodian must ensure that the imaged records function within the electronic health records;
- Authenticity and integrity are maintained through the written policy, standardized protocol and audit provisions within the electronic health records; and
- Quality, function and retrievability must be verified:
  - Transposed notes or forms need to be reviewed by the author (initialed and dated, usually by dentist or staff member often in conjunction with the patient):
  - The use of stamps such as the following can greatly help in ensuring appropriate record management:
    - Date received;
    - Receivers initials;
    - Date reviewed;
    - Reviewers initials;
    - Date transposed;
    - Transposer's initials;
    - Date scanned; and
    - Scanners initials.
  - Imaged ongoing records need to be checked to ensure their capture and appropriate storage within the electronic health records;
    - This is largely done on a per image basis with verification through reference into patient general or progress notes with reviewers initials;
  - Large scale projects such as the transfer of multiple existing analog based records require either review of each record or a randomized audit:
    - Regardless of the approach taken, the protocol, date of review and verifiers name needs to be clearly identified; and
  - Retrievability may be an issue for technology such as 3D imaging of dental casts unless there is a long term supported format. As such custodians must ensure that the records

within the electronic health records are converted when a format is no longer supported so retreivability is maintained:

- At this stage, standards such as PDF/A were designed to deal with this issue but even they may be overtaken by technology or legislated changes in the future.
- As with all electronic patient records the need for reliable and safe backup through the conversion period and following needs to be assured.

Assessment of the need to maintain analog records once imaged

- The Alberta Dental Association and College Standard of Practice: Patient Records applies regardless of record format;
- If there is a suspected or known legal issue, the original analog records must be maintained in a parallel record along with their imaged counterparts and cross referenced with the electronic health record;
- Record types where the practice does not wish to outsource and/or in-house the capability and technology to image is not available must be maintained in analog format in a parallel record cross referenced within the electronic health record;
- Certain types of records can be disposed of based on a written policy schedule once their immediate use has been fulfilled (primarily correspondence with third party carriers related to issues such as payment or coordination of benefits)*;
- Informal notes and memos once transposed into a patient record can be disposed based on a written policy schedule*;

> * It would be best practice to maintain copies of transitory records due the ease of scanning, digital transfer and storage within electronic health records.

- All patient records, billing records and communication must be imaged and maintained including patient centered information (often this information is also transposed into the electronic health records due to the less than total adoption of digital technology and format issues; this includes such items as medical history forms, general consents, informed consent documentation and treatment plans);
- The custodian must create a defined schedule that may vary depending on record type and reviewer protocols prior to disposition; and
- Disposal of analog records once imaged must be authorized by the custodian based on the Alberta Dental Association and College Standard of Practice: Patient Records and Standard of Practice: Privacy and Management of Patient Health Information apply. The defined schedule may vary depending on record type and reviewer protocols.

Appendix 1

Template for a Policy for Conversion of Analog Health Records to Digital

(Also found in Appendix 7 of the Guide for Developing Information Privacy and Security Practice Specific Policies)

Policy Development Date: _____

Practice Name: _____

Practice Address: _____

_____

The custodian (dentist) of the patient records for the above named practice is:

_____

The affiliates of the custodian are as follows:

_____

_____

Written Conversion Protocol

The custodian will develop a written conversion protocol for each record type consistent with the Alberta Dental Association and College Guide for Conversion of Analog Health Records to Digital. The custodian will ensure that the conversion protocol includes the following:

- Source document type
- Conversion technique
- Identification of individuals and title/position of those providing the conversion service
- The initials of the individual converting the record including the date and file location within the electronic health record will be clearly identified within the progress/clinical notes
- The location and site where the conversion will take place
- What type of support will be required to do the conversion
- The necessary privacy and confidentiality agreements are in place
- Verification of quality, function and retrievable
- Disposal and retention criteria for conversion of analog health records to a digital format
- Additional requirements that are the outcome of a Privacy Impact Assessment

The custodian is responsible to see that the affiliates, staff and contractors adhere to the conversion policy and that digital copies maintain original quality, content and function, and

- establish an ongoing compliance monitoring, audit and review process to ensure that the protocol and process is adhered to so the integrity and authenticity is maintained, and
- establish a verification process to ensure the digital copy maintains its original quality, content and function is intact to fulfil its ethical, legal and professional roles.

The custodian has reviewed the overarching Alberta Dental Association and College Standard of Practices and the related guides for:

- Patient Records;
- Privacy and Management of Health Information; and
- The custodian has deemed that the practice is compliant with the above Standards.

Date: _____   Signature:_____

Title: _____   Printed Name: _____

The custodian will hold _____ meetings to review conversion protocols (suggest at least yearly), and

- amendments or changes to the protocol are dated and attached to the policy; and
- amendments or changes are operationalized

Policy Review Schedule: _____

Proposed Dates: _____

Analog Record Types have been identified for conversion to digital to be entered into the electronic health record maintained by the above named custodian: (check all that apply)

☐ Existing analog records   ☐ Patient charts

☐ Film based radiographs and slides   ☐ Photographs

☐ Dental models   ☐ Correspondence

☐ Financial and appointment records   ☐ Other: _____

Ongoing Internally Generated Records: (check all that apply)

☐ Medical history   ☐ Informed consent

☐ General consents   ☐ Laboratory and drug prescriptions

☐ Patient treatment plans   ☐ Education and postoperative care materials

☐ Other: _____

Ongoing Internally Generated Transitory Notes: (check all that apply)

☐ Telephone memo ☐ After hour call notes

☐ Other: _____

Ongoing Externally Generated communications: (check all that apply)

☐ Insurance companies ☐ Dental specialists
☐ Other health care provider ☐ Laboratory service
☐ Diagnostic service ☐ Other: _____

Privacy Impact Assessment

The custodian will undertake a review of the conversion process and protocol to determine if there is the need for a Privacy Impact Assessment to be obtained from the Office of the Information and Privacy Commissioner of Alberta before proceeding with the conversion of records, and

- if a Privacy Impact Assessment is required, conversion will not occur until the necessary response and conditions are received from the Office of the Information and Privacy Commissioner of Alberta, and
    - the conditions of the Privacy Impact Assessment are adopted as part of the conversion protocol.
- if no Privacy Impact Assessment is required, the conversion will follow the policy and protocol as developed by the custodian.

The custodian has <u>adopted</u> the Alberta Dental Association and College Guide for Conversion of Analog Health Records to Digital as the framework and underlying policy.

A copy of the Alberta Dental Association and College Guide for Conversion of Analog Health Records to Digital is appended to this policy.

Date: _____ Signature: _____
Title: _____ Printed Name: _____

Appendix 2

Template for Conversion Project Protocol based on Record Type

Each record type will require its own standardized protocol and format. There will be an ongoing need to ensure that practices create and/or update protocols when new or additional analog record types are encountered before conversion to digital for entering into the electronic health record.

Project: _____

Description: _____

_____

Source Document Type: _____

Technique
☐ Transposed:
    ☐ Summary:
        ☐ Digital copy of source document maintained
        ☐ No digital copy of source document
    ☐ Complete transfer:
        ☐ Digital copy of source document maintained
        ☐ No digital copy of source document

☐ Imaged:
    Format: _____

              _____

    Technique: _____

              _____

Alberta Dental Association and College
Guide for the Conversion of Analog Health Records to Digital
18 | P a g e

Verification of quality, function and retrievable

Name of verifier: _____   Date: _____

Protocols used:

    ☐   Review of individual imaged/ transposed record

    ☐   Review with randomized audit

Review steps:

_____

_____

_____

_____

Privacy and Confidentiality

Agreements in place: ☐ Yes   ☐ No

Privacy Impact Assessment:

    Required: ☐ Yes   ☐ No   Completed: ☐ Yes   ☐ No

Date and Identity of data transfer personal

Date: _____

Specific: _____

Ongoing:_____

Identify of data transfer personal: _____

_____

☐   Referenced in electronic health records with initials/date/file location.

Location

On-site: _____

Off-site: _____

Remote transfer: _____

Support

☐ In-house: _____

☐ External: _____

☐ In-house ongoing: _____

☐ External ongoing: _____

Disposal and Retention Criteria

Maintain parallel analog record:

    ☐ Legal action suspected

    ☐ Legal/ complaint action underway

    ☐ Other _____

Retention:

    Hold until review by:

        ☐ Author

        ☐ Dentist/staff

        ☐ Patient

        ☐ Other _____

Disposal:

    ☐ Hold for _____ days as policy of custodian prior to disposal

    ☐ Immediate disposal as authorized by custodian

Additional Specific Criteria:

_____

_____

_____

_____

Tutorial 1

Photographing Original Analog Radiographs

The tutorial will provide a method for converting analog radiographs (film) to a digital format. This is an example, not the required method of how digitization of various analog patient records may be achieved using photography as other methods may exist.

Digitizing Radiographs with a Point and Shoot Camera

Photographing radiographs can create digital images that maintain their diagnostic properties if done correctly. When following some basic exposure settings, a light box in a dark room and a point and shoot camera can digitize the radiographs in record time. Not all point and shoot cameras can focus so close to fill the frame with a Periapical, but all can capture a Panorex.

©2015 Rita Bauer – Faculty of Dentistry, University of Toronto & Bauer Seminars Inc.

Alberta Dental Association and College
Guide for the Conversion of Analog Health Records to Digital
21 | P a g e

Photography of Radiographs with a Point and Shoot Camera

1. Check how close you can focus with your point and shoot camera when Macro ✿ (close up function) is selected
2. Set the Exposure Setting to P

3. Turn Flash OFF
4. Set ISO to Auto
5. Select the B&W function in your camera menu
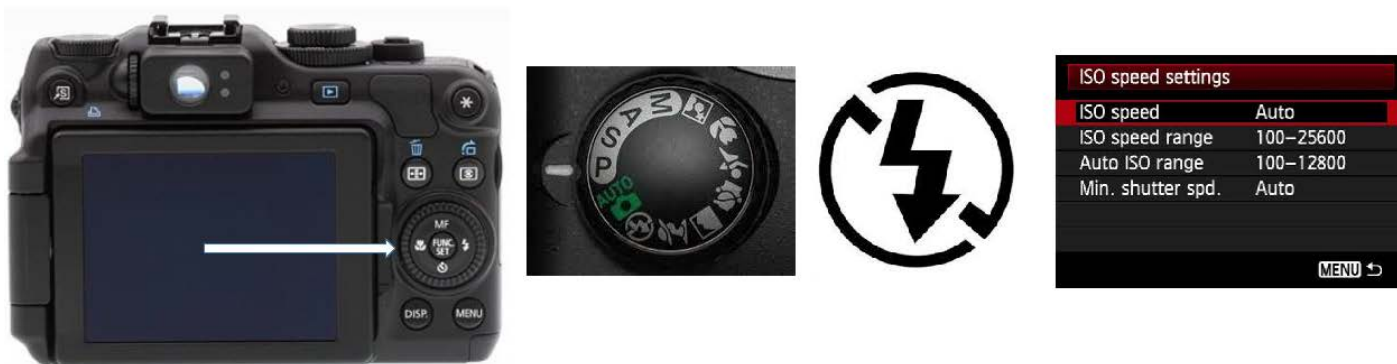
©2015 Rita Bauer – Faculty of Dentistry, University of Toronto & Bauer Seminars Inc.

- X-Ray must be placed on a view box. Ideally it should be a 5000 K light source. If the view box has a daylight balanced light source, you do not have to change the white balance or select the B&W setting on the camera.

- Many light boxes are not evenly illuminated. Take this into account when you take a picture and place the radiograph in the center

- Blank Computer screen or telephone screen will NOT work. You will see the horizontal lines on your images.

©2015 Rita Bauer – Faculty of Dentistry, University of Toronto & Bauer Seminars Inc.

- X-Ray must be placed on a view box. Ideally it should be a 5000 K light source. If the view box has a daylight balanced light source, you do not have to change the white balance or the B&W setting on the camera.

- Many light boxes are not evenly illuminated. Take this into account when you place the X-Ray on the screen. Block out any extra light on the light box.

- Blank Computer screen or telephone screen will NOT work. You will see the horizontal lines on your images.

Select the B&W Setting in your Camera Menu or select the appropriate White Balance for the light source.

B&W Setting

©2015 Rita Bauer – Faculty of Dentistry, University of Toronto & Bauer Seminars Inc.

1. When photographing images with a drastic difference in density, The camera will focus and read the exposure in the center and the X-Ray will be overexposed.
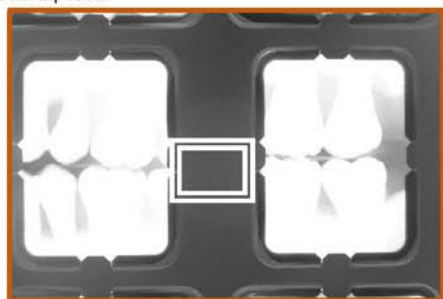
2. Move the center of the screen over the area of interest to obtain the correct exposure reading
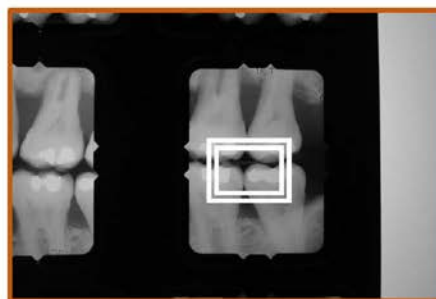
3. Press the shutter half way down until the focusing box turns green Keep the pressure down on the shutter(focusing square must stay green)
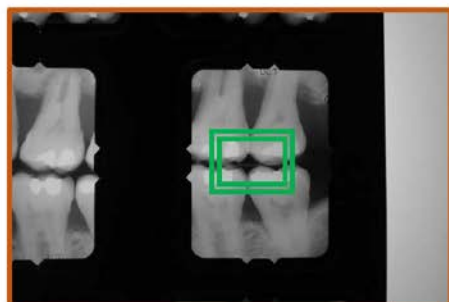
4. Move the camera until the required field is centered on the screen, Then press the shutter all the way down to take the picture.
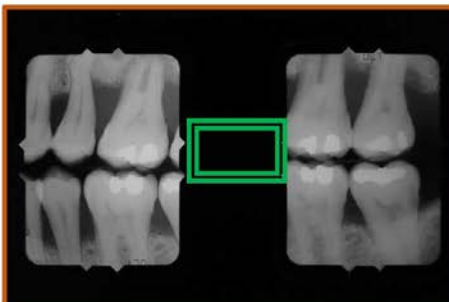
©2015 Rita Bauer – Faculty of Dentistry, University of Toronto & Bauer Seminars Inc.
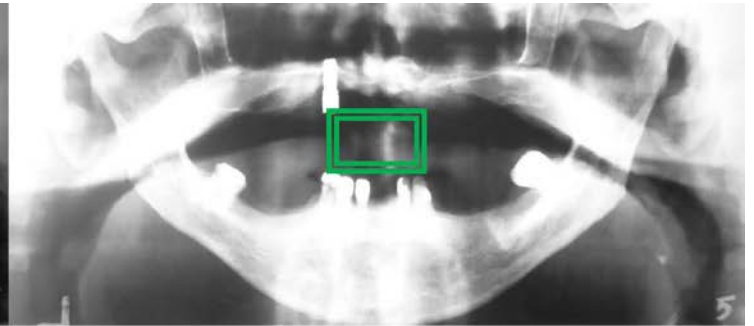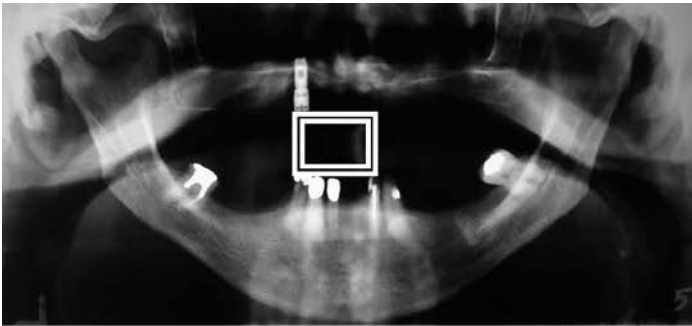
When an image has extreme densities, exposure adjustments must be made. If the exposure would be taken with the focus point is in the dark area, the exposure would be overexposed and too light.

1. place the focus point (center on the screen) on the main subject or the area of interest. You will see the exposure adjustment on the screen. Once you have the correct reproduction of the image, press the shutter button halfway down to lock the focus. (White box turns green
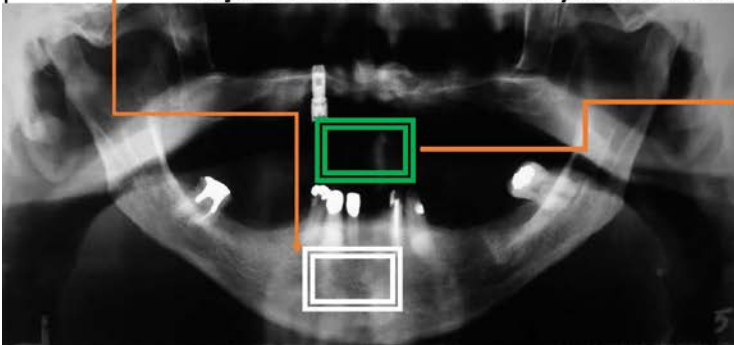
2. Holding the shutter button halfway down (locking the exposure and focus), compose the shot the way you want and then center the X-Ray.
You cannot move closer or further away, otherwise the image will be out of focus. You can move up and down and sideways to center the image.
3. Press the shutter button all the way to take the picture

Alberta Dental Association and College
Guide for the Conversion of Analog Health Records to Digital
24 | P a g e

Tutorial 2

Scanning Original Analog Radiographs

The tutorial will provide a method for converting analog radiographs (film) to a digital format. This is an example, not the required method of how digitization of various analog patient records may be achieved using photography as other methods may exist.

Scanning radiographs with a dual flatbed scanner

- When digitizing x-rays for patient records do not crop any area of your radiograph. The whole x-ray must be scanned.
- The most important aspect when scanning any image is the resulting image size. An image has to be large enough that it does not pixelate when used for printing or projection.
- For the purpose of digital record keeping, case presentations and inserting images into letters, large radiographs are scanned at 300 dpi for life size reproduction. Periapicals are scanned at 1200 dpi to meet the resolution requirements of 300 dpi for a 4x6 printed image.
- A dentist will need to obtain a scanner that has the ability to scan images of transparencies such as radiographs. Many home and office combination printer/scanner/fax do not have this capability or the scanning area is too small for a radiograph the size of a Panorex .
- For the purpose of scanning large radiographs make sure the scanner is capable of reproducing large size Film, Prints and Slides. Because of the large scanning field the price increases drastically. (Approx. CAD 900.-)
- Of course equipment is constantly being discontinued and becomes obsolete, so please check with experts on available and current models. Large photographic camera stores with a commercial department will have knowledgeable staff to advise you and usually will have a unit on display that can be tested.

1. Move the cropping border to the area of interest
2. Select 8-bit Grayscale for X-Rays
3. Select 300 dpi for a life size print size of the image

Rita Bauer – University of Toronto, Faculty of Dentistry & Bauer Seminars Inc.
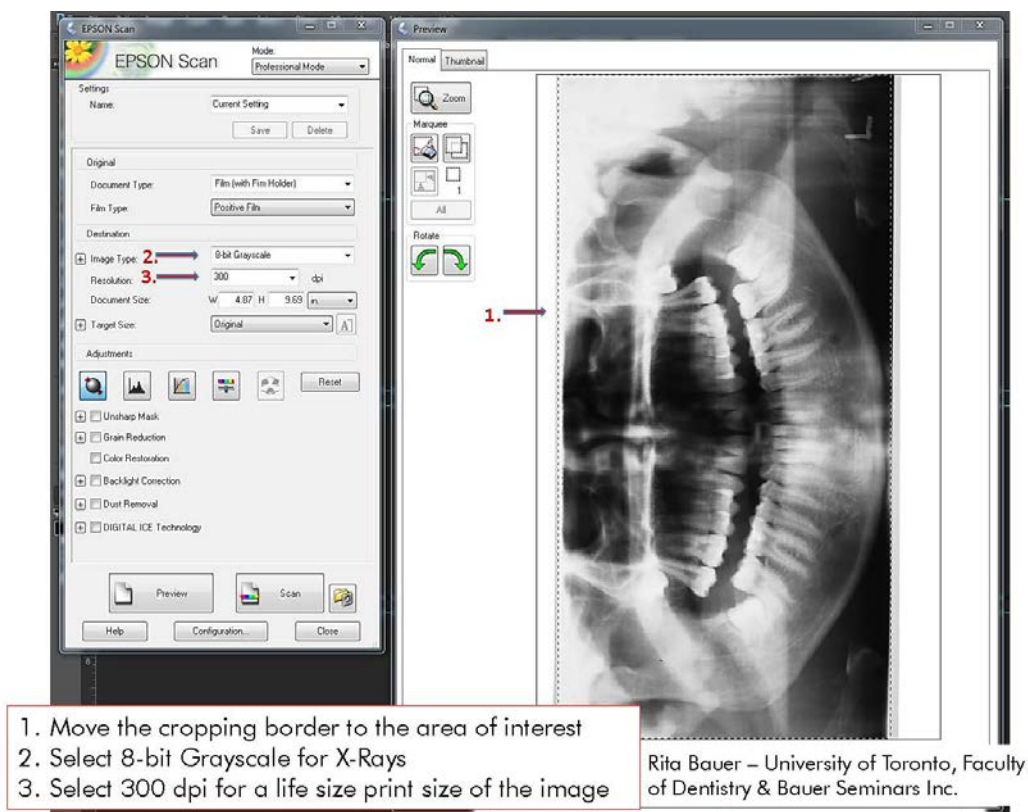
Image Size

- Cropping a portion of your scanned x-ray (300 dpi) to magnify small detail results in a loss of resolution.

- If you are planning to crop an area of interest, take a second scan of the required area at the appropriate resolution size. (1200 dpi)

Rita Bauer – University of Toronto, Faculty of Dentistry & Bauer Seminars Inc.
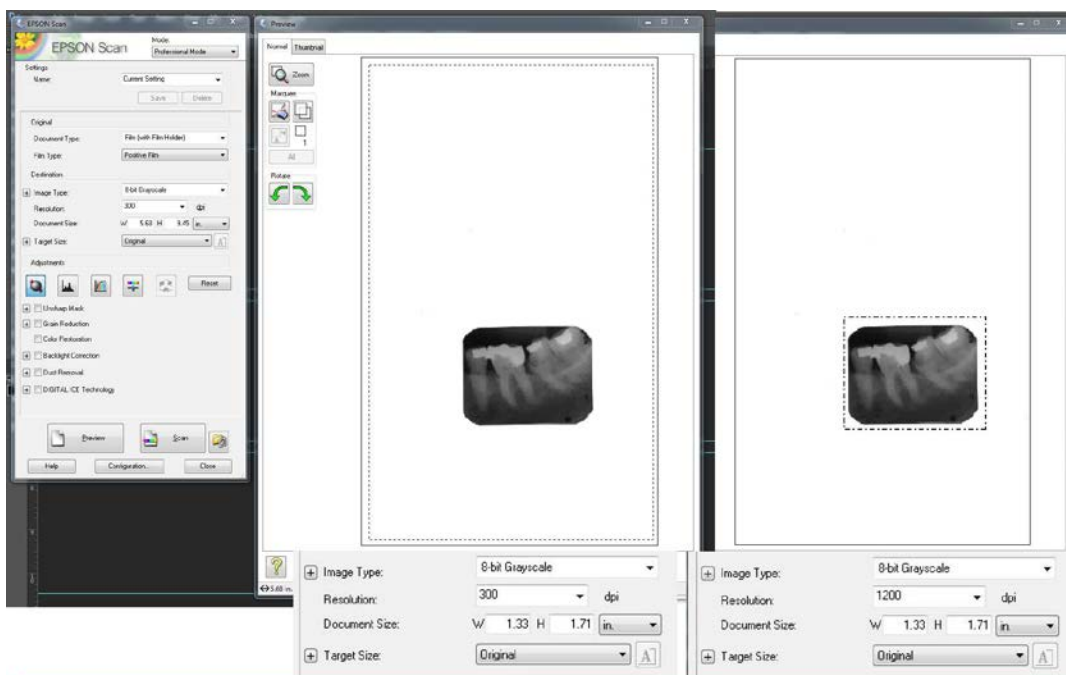
1. Drag the border around the image to select the required area for scanning.
2. Select 8-bit Grayscale
3. Select 1200 dpi for a 4x6 print size of a full screen when projected

Rita Bauer – University of Toronto, Faculty of Dentistry & Bauer Seminars Inc.

When a periapical is selected on the scanner, the image will reproduce the thumbnail size (1:1) and is not large enough for viewing or printing.
Change the resolution to 1200 dpi and the image will be large enough for a 4x6 print at 300dpi and the image will view full size on your computer screen.
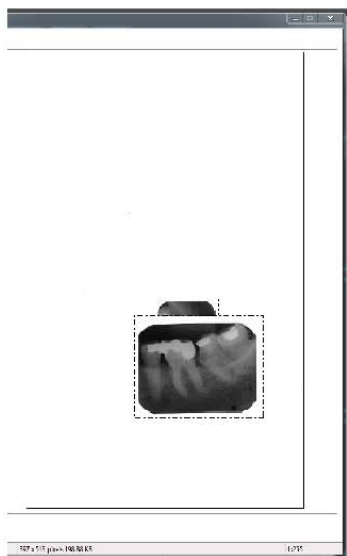
Rita Bauer – University of Toronto, Faculty of Dentistry & Bauer Seminars Inc.
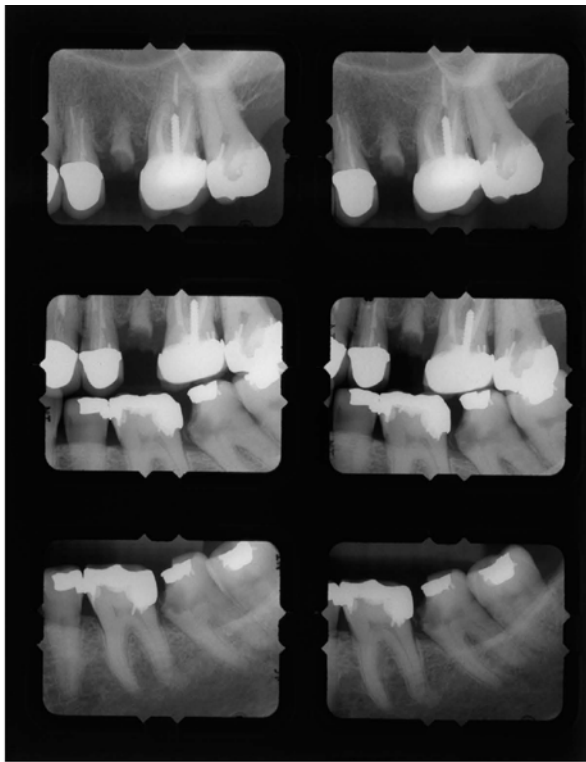
- A full mouth series reproduces best when each Periapical is scanned individually or at the most each section at a time.
- The scanner cannot adjust the individually difference in density of each radiograph when scanned as a group.
- Each section or Periapical is then inserted into the document individually to make a full series.
- A full mouth series does not show enough detail when scanned in one piece.

Rita Bauer – University of Toronto, Faculty of Dentistry & Bauer Seminars Inc.
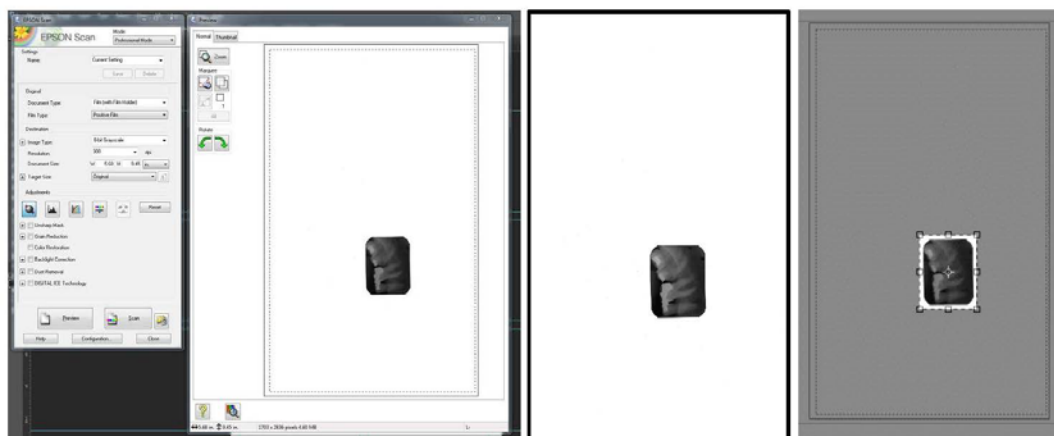
Important! When placing an item on the flatbed, most scanners will select the whole field. Drag the border around the x-ray to eliminate the unwanted area. If the item is not selected, the scan has to be cropped and the actual image will be extremely small.

Rita Bauer – University of Toronto, Faculty of Dentistry & Bauer Seminars Inc.

Tutorial 3

Scanning Analog Records or Saving Digital Records as PDF/A Documents

There are many ways and various software programs available to capture and save documents, in the PDF/A format that are compliant with the PDF/A standard. The following tutorial is an example of a few options for saving documents as a PDF/A compliant document. The Alberta Dental Association and College does not recommend one method or software over another and is providing the examples using Adobe Acrobat X Pro and Microsoft Office for convenience only.

Three examples are provided:

- **A.** Scanning and Saving a Document as a PDF/A
- **B.** Scanning and Saving a Document as a PDF/A using the print option "Adobe PDF" feature,
- **C.** Saving an existing digital Microsoft Office document as a PDF/A using the Adobe Acrobat X Pro plugin for Microsoft Office.

A. <u>Scanning and Saving a Document as a PDF/A</u>

1. If the scanner supports PDF/A scanning scan the document directly to the PDF/A format. If the option to scan as a PDF/A is not available go to Section B.
2. Open the scanned PDF/A document. The file will be labeled near the top with a blue bar stating, "The file you have opened complies with the PDF/A standard and has been opened read only to prevent modification." This message **does not** assure that the file conforms to the PDF/A standard. To check for conformance to the standard click the circled icon below with the arrow pointing to it to commence the verification process.
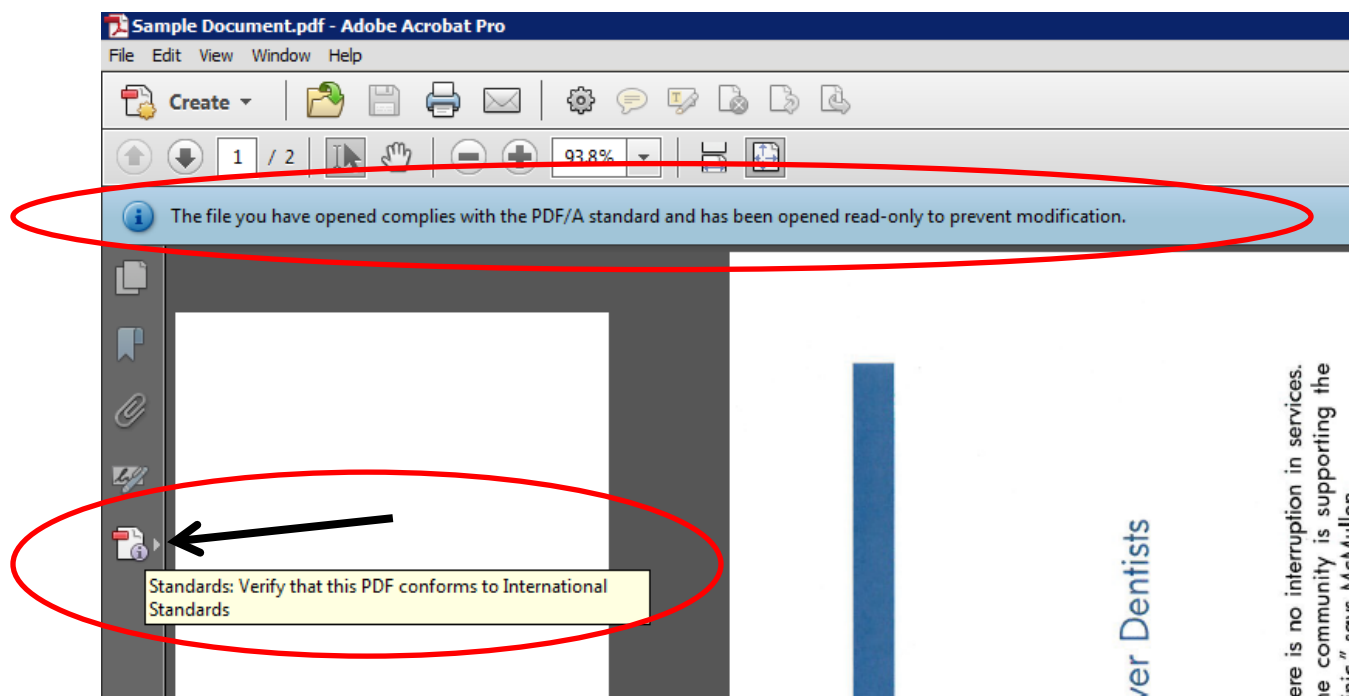
Click "Verify Conformance"

Once the process of conformance verification is complete, the "Status" will display "verification succeeded" see below.
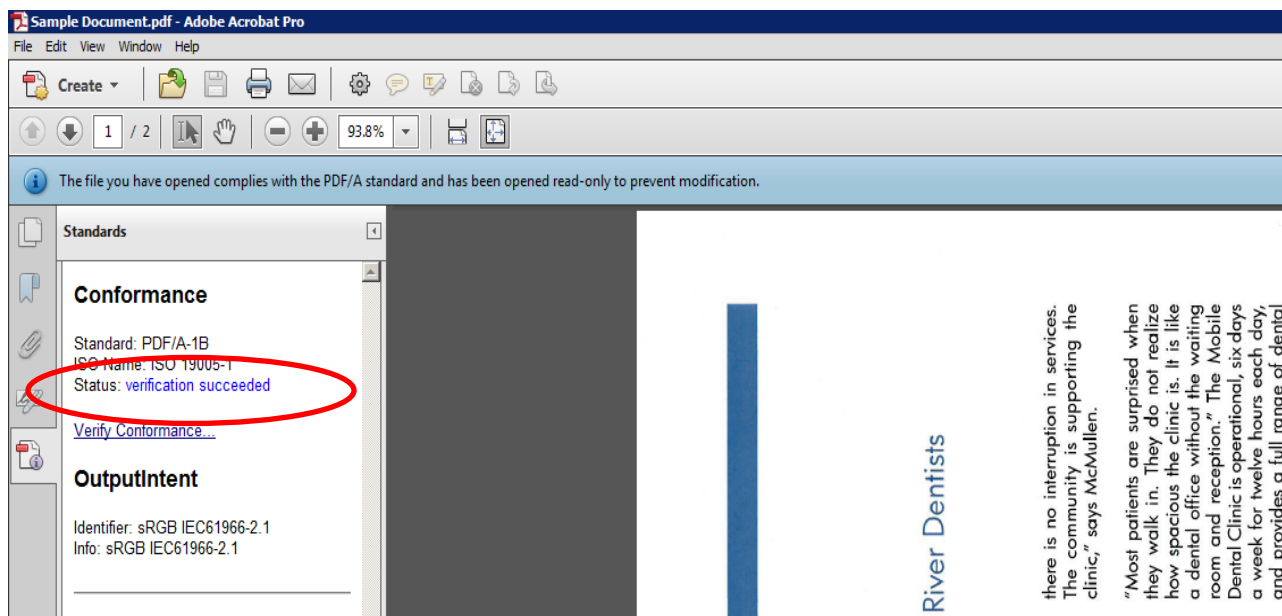
Once verified save the PDF/A in the desired location and with the appropriate file name. Continue with the next scan following steps 1 and 2.

If the verification process fails, try the verification again. If the process continues to fail try one of the other methods of creating a PDF/A and/or contact your technical support for assistance.

B. Scanning and Saving a Document as a PDF/A using the print option "Adobe PDF" Feature

1. If the document is scanned as a PDF, open the document; click "File" and then "Print". Select "Adobe PDF" as the printer in the dialogue box that opens. (This process allows the saving of the document in the PDF/A format and does not print a hard copy of the document)
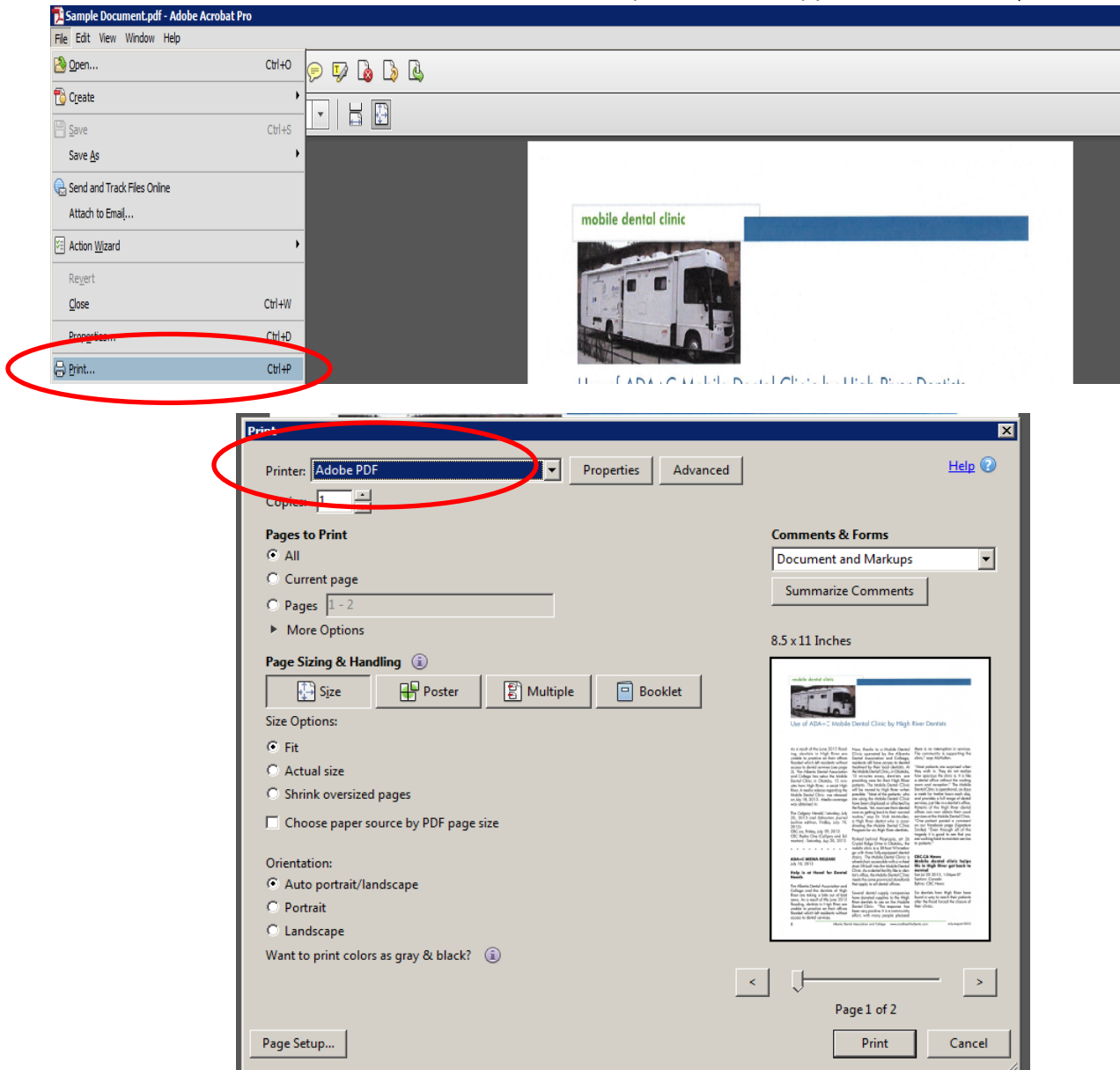
2. Click "Properties"
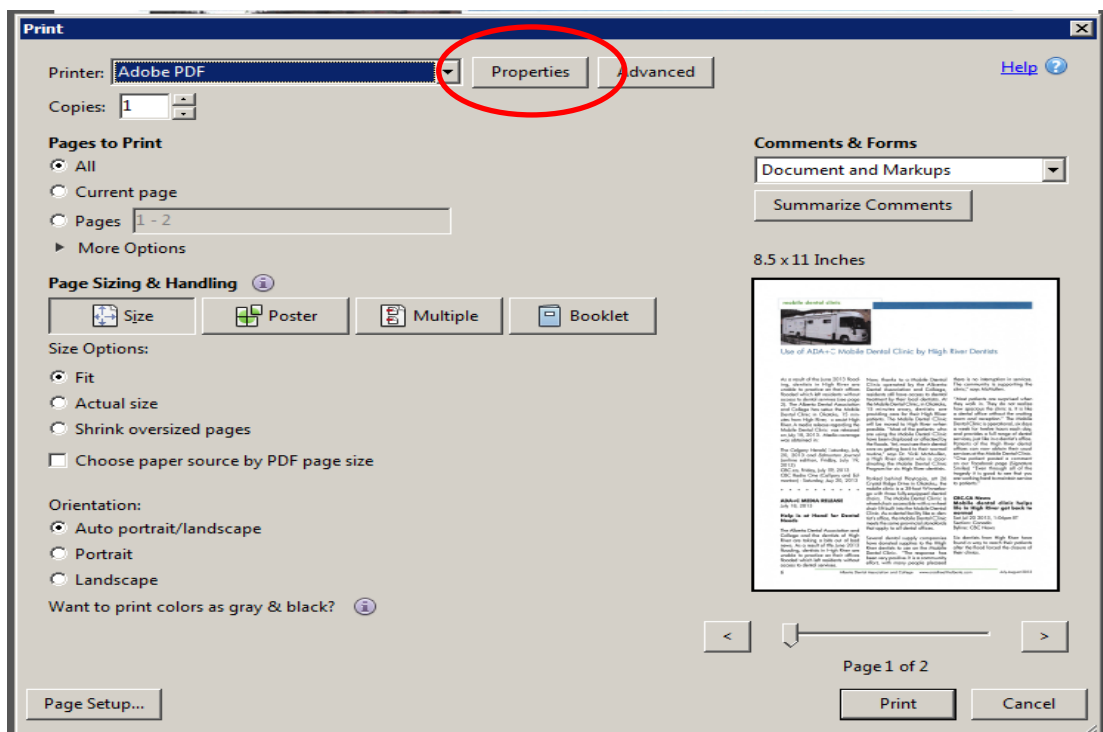
3. Under the "Default Settings" select "PDF/A-1b:2005(RGB) then click "OK"
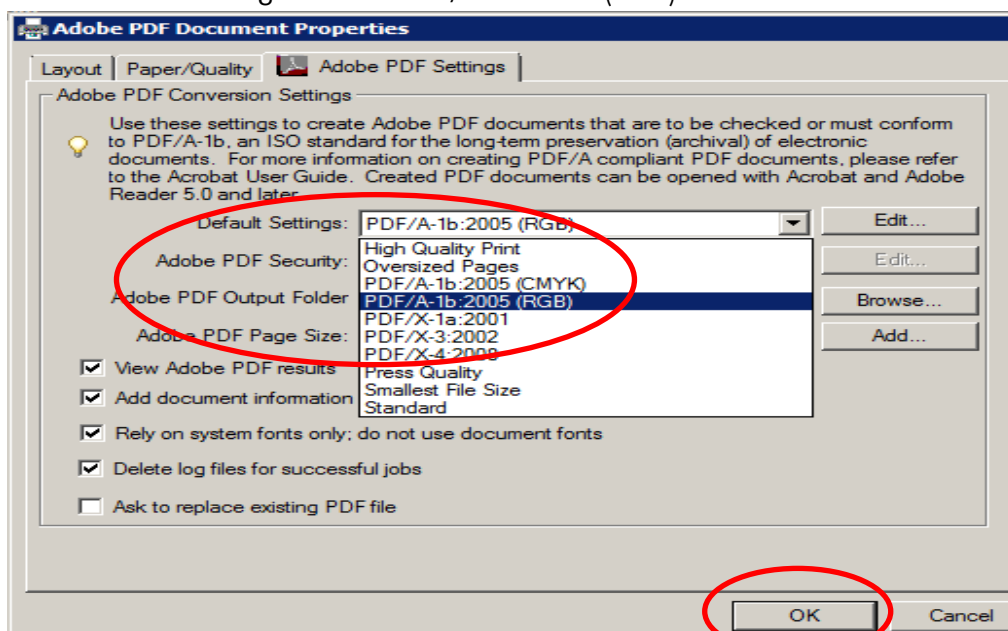
4. Click "Print"
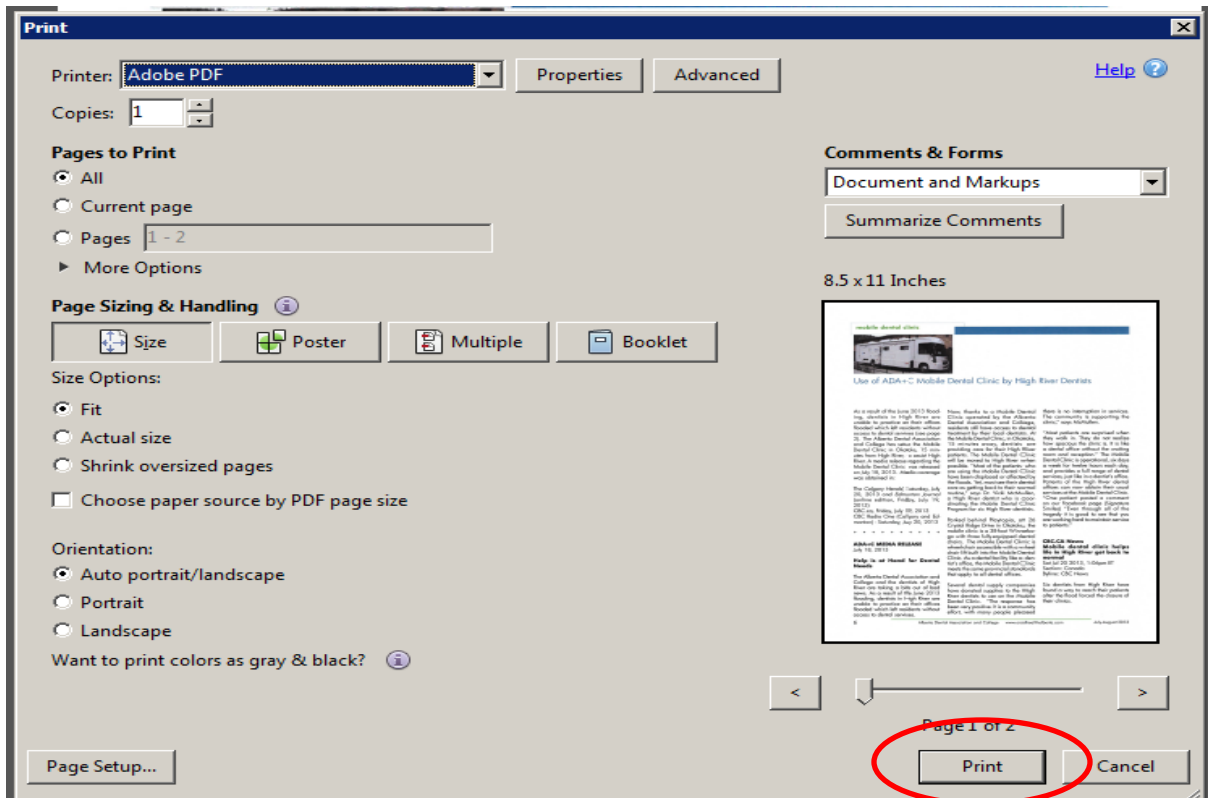
5. In the dialogue box that opens save the file in the desired location with the appropriate file name.
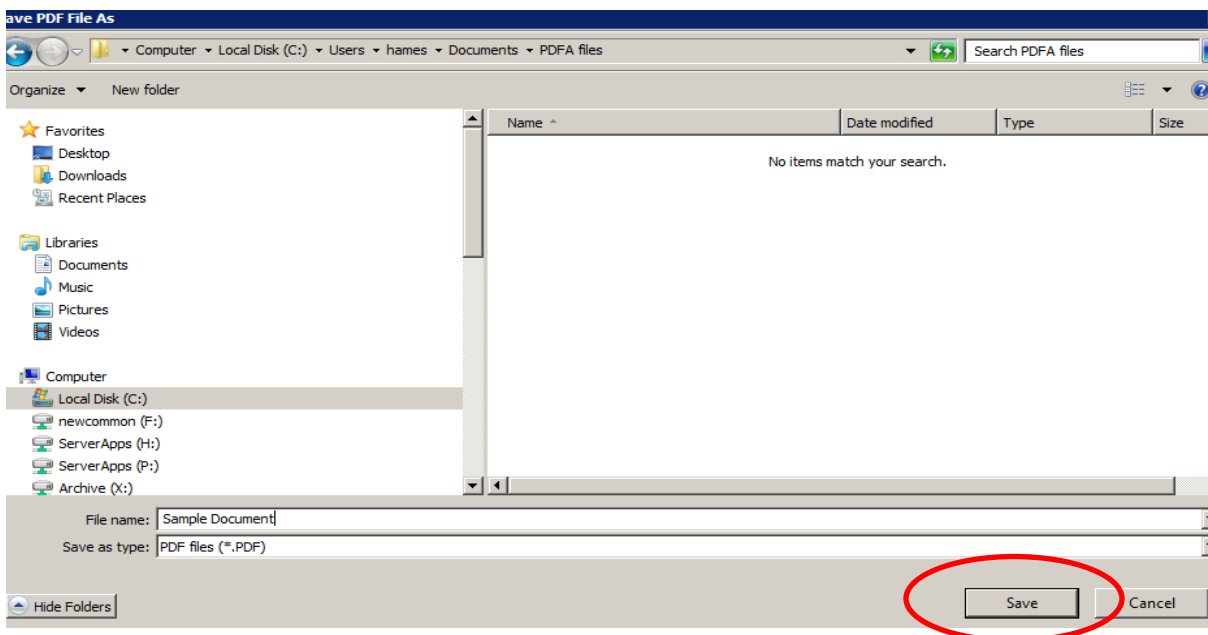
6. The file should open automatically (if the file does not open navigate to the saved location and open the file). The file will be labeled near the top with a blue bar stating, "The file you have opened complies with the PDF/A standard and has been opened read only to prevent modification." This message **does not** assure that the file conforms to the PDF/A standard. **To check for conformance to the standard click the circled icon below with the arrow pointing to it to commence the verification process.**

NOTE: files can be rotated for viewing but will not save in the rotated position.
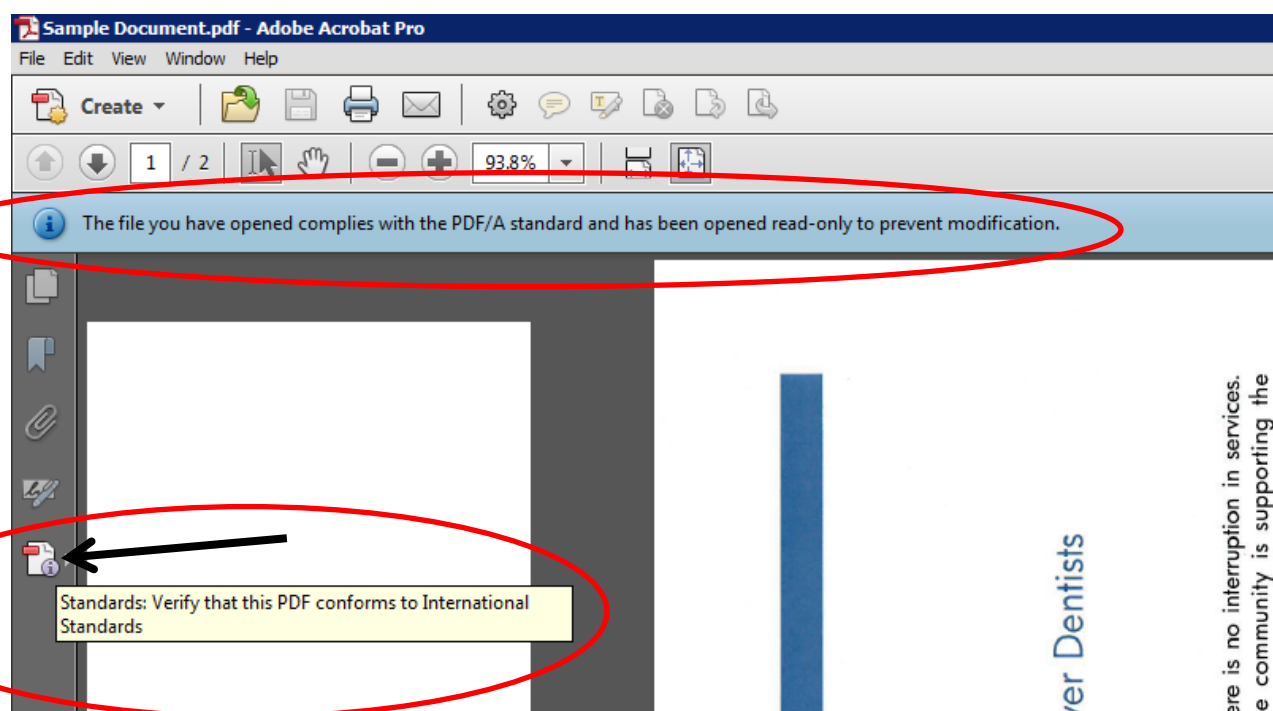
Click "verify Conformance"
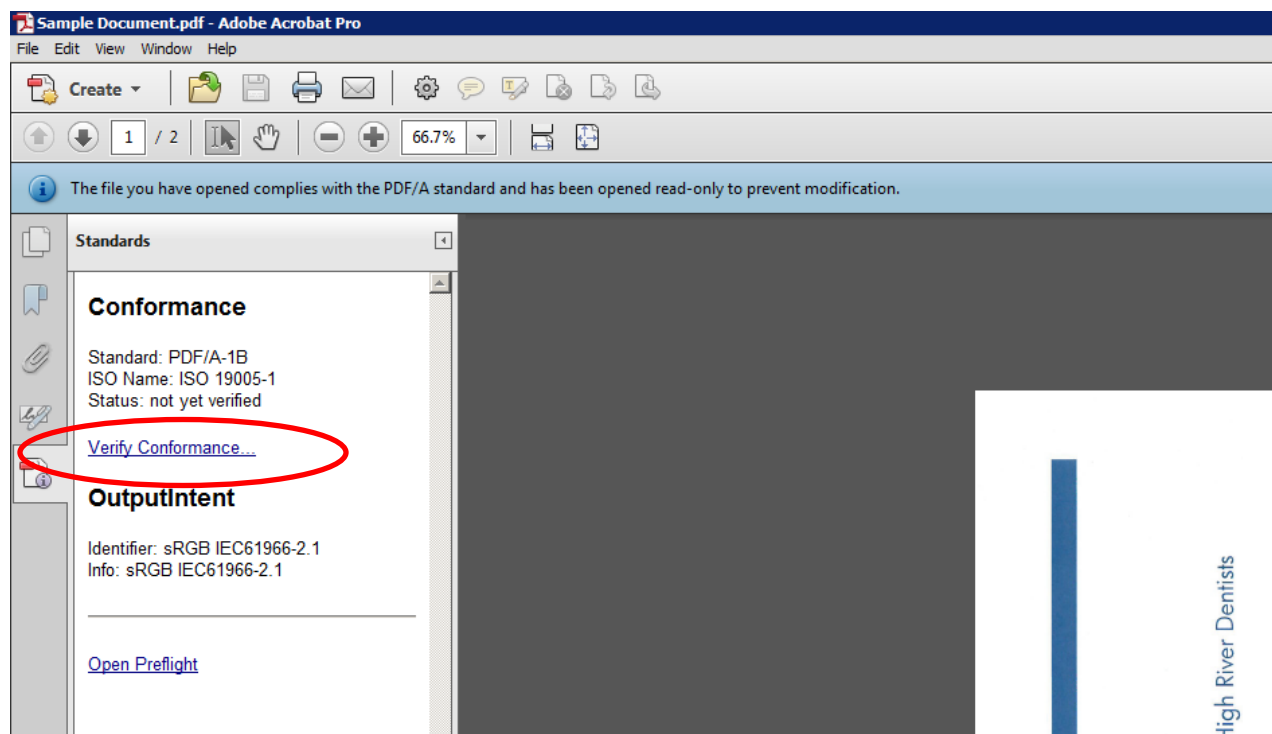
Once the process of conformance verification is complete the "Status" will display "verification succeeded"
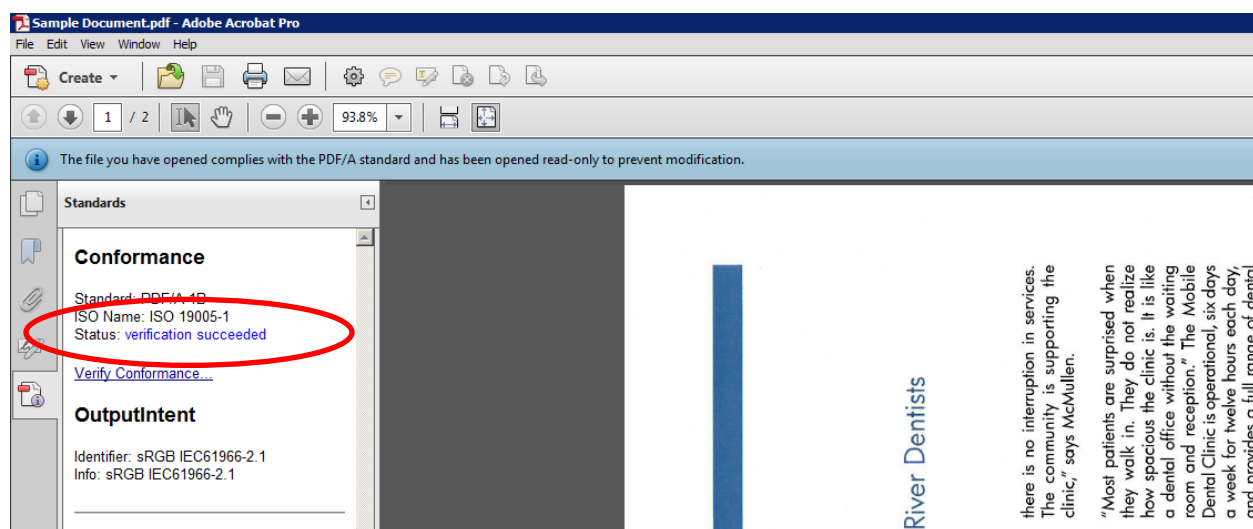
Continue with the next document following steps 1 to 6.

If the verification process fails, try the verification again. If the process continues to fail try one of the other methods of creating a PDF/A and/or contact your technical support for assistance.

Alberta Dental Association and College
Guide for the Conversion of Analog Health Records to Digital
36 | P a g e

C. Saving an existing digital Microsoft Office document as a PDF/A using the Adobe Acrobat X Pro plugin for Microsoft Office.
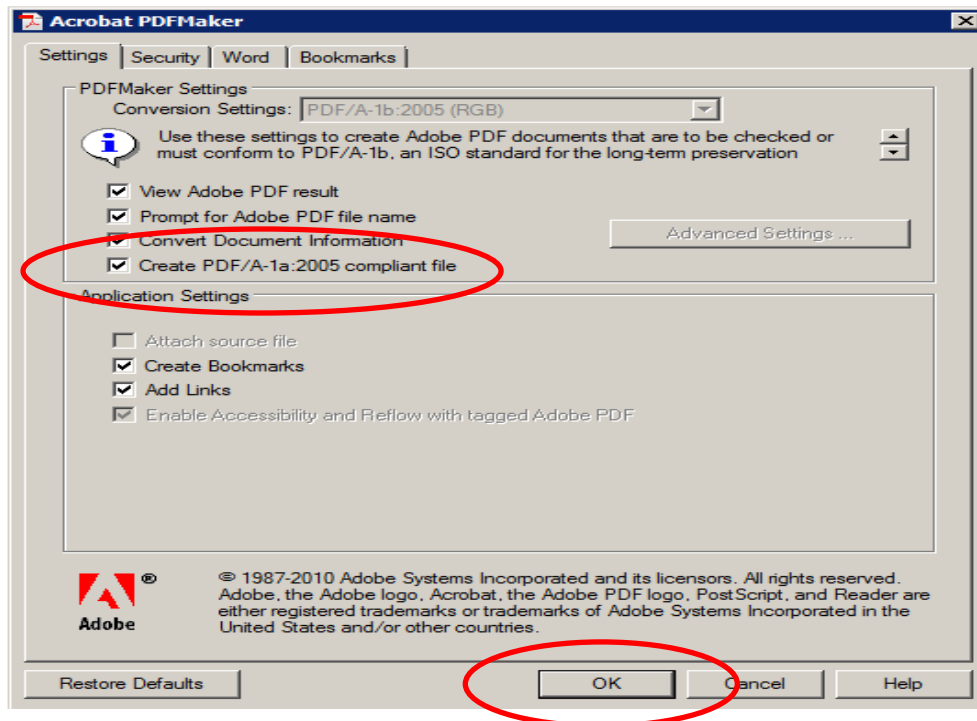
1. For this example a "Word" document will be saved in the PDF/A format. If both Microsoft Office and Acrobat X Pro are installed the Acrobat menu icon will be available on the top menu bar. Before proceeding save the word document. Click Acrobat.
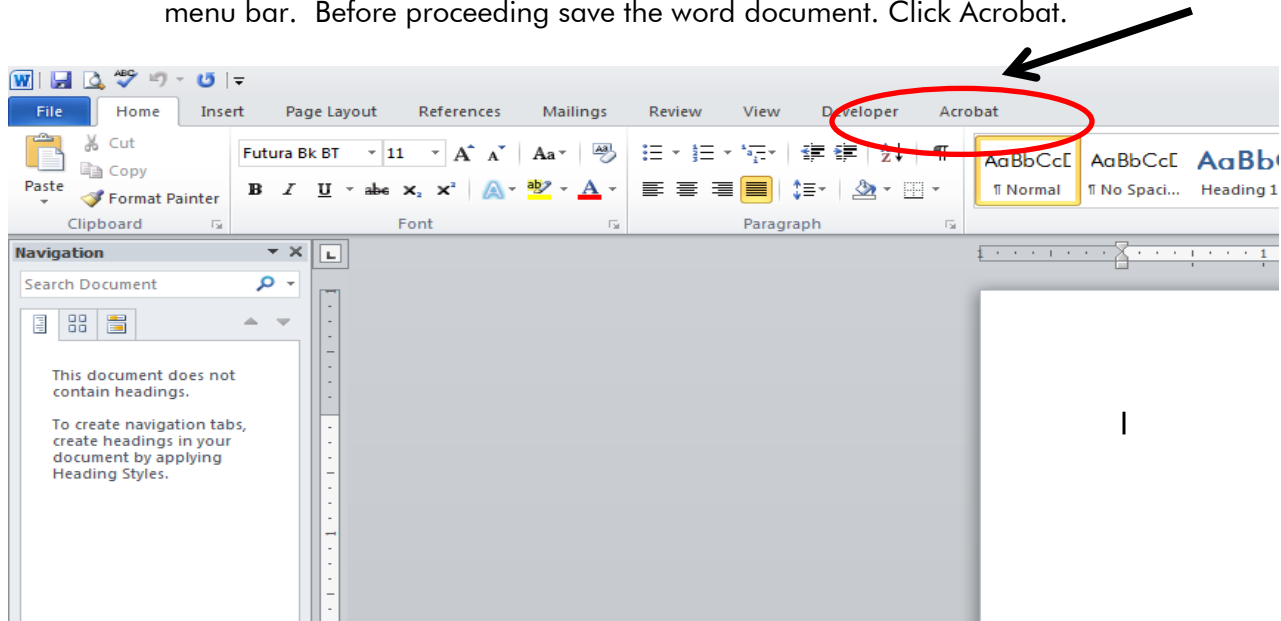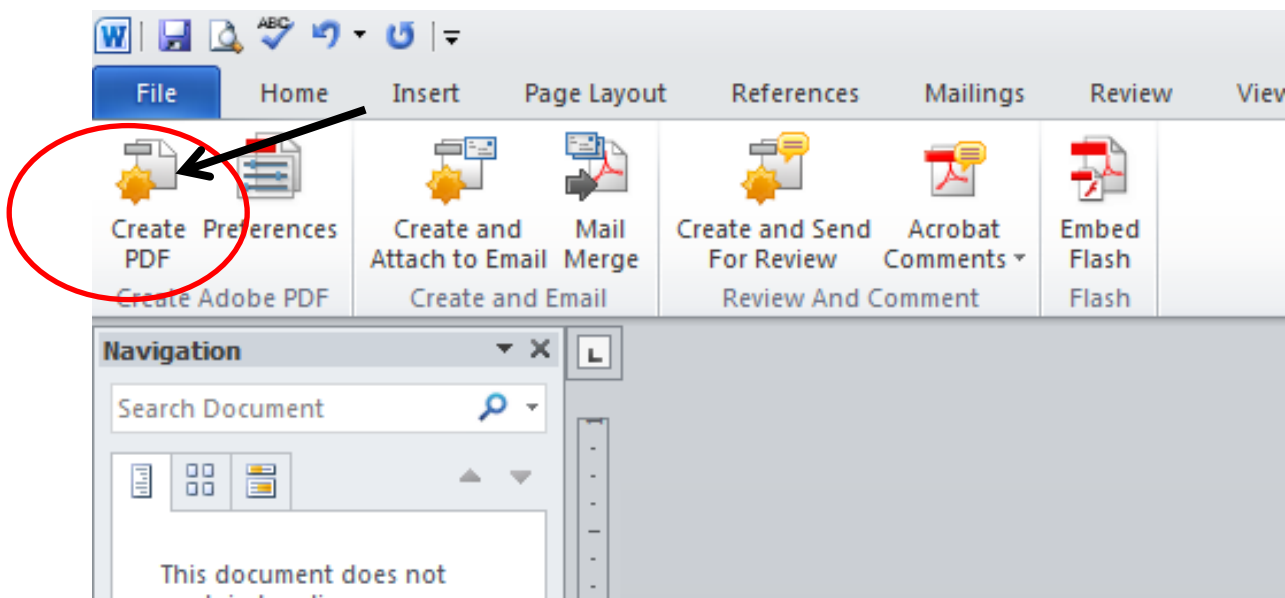

2. Click Preferences
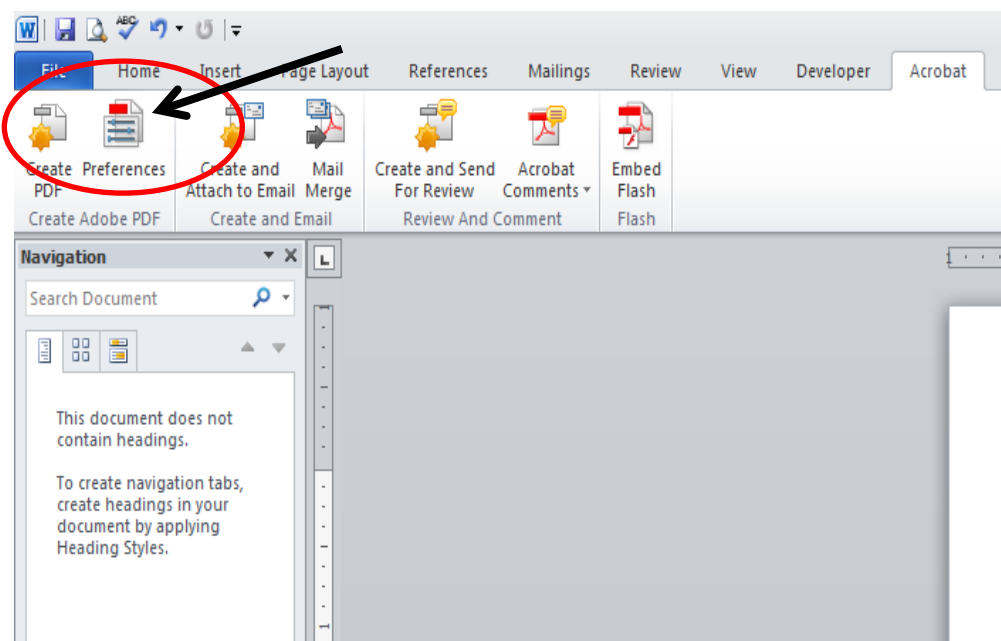
3. Make sure that the "Create PDF/A-1a:2005 compliant file" box is checked and click "ok"

4. Click 'Create PDF" – befoe clicking "Create PDF" save the Word file in the desired location with the appropriate file name. If this is not done the dialogue box in number 5 will open prompting the saving of the word document.
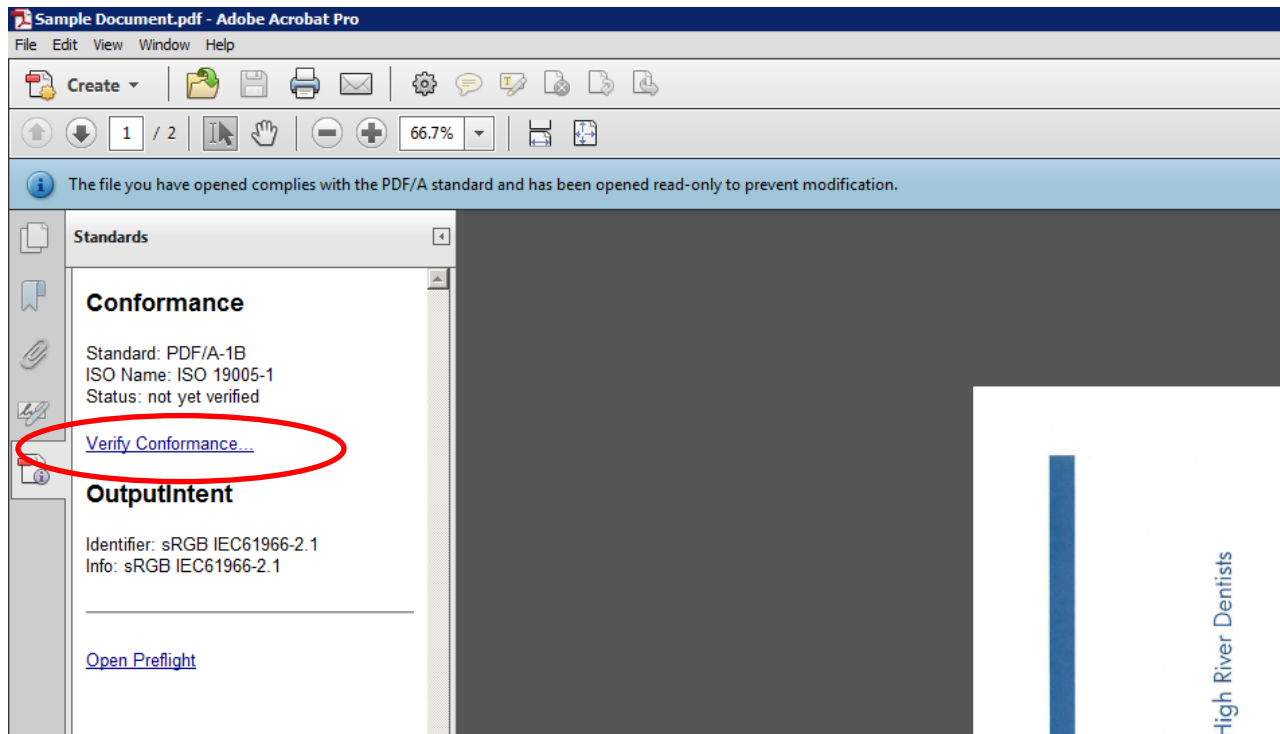
5. The dialogue box that opens by default is at the location the Word document was saved to. The name for the PDF/A document defaults to that of the Word document. Check the "View Result" box and save the file in the desired location with the appropriate file name.
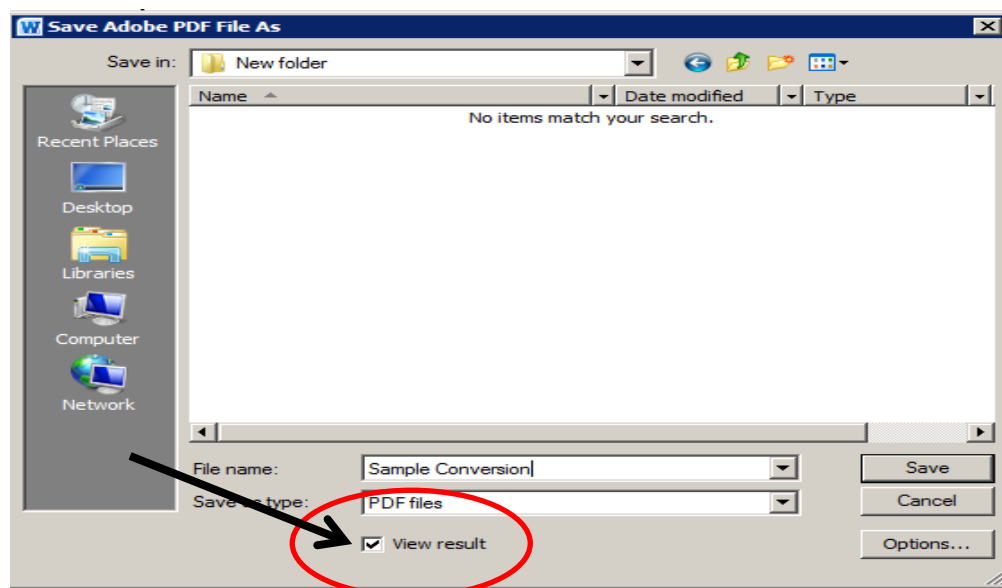

6. If the view result box above is checked, the PDF/A document will automatically open. The file will be labeled near the top with a blue bar stating, "The file you have opened complies with the PDF/A standard and has been opened read only to prevent modification." This message **does not** assure that the file conforms to the PDF/A standard. **To check for conformance to the standard click the circled icon below with the arrow pointing to it to commence the verification process.**
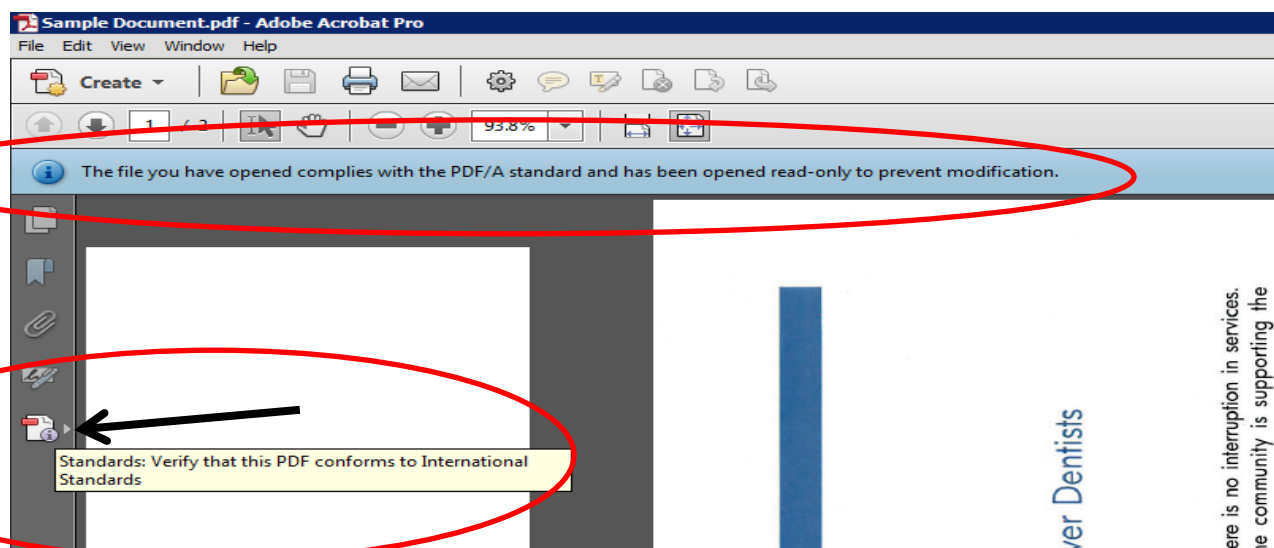
Click "verify Conformance"

Once the process of conformance verification is complete the "Status" will display "verification succeeded"
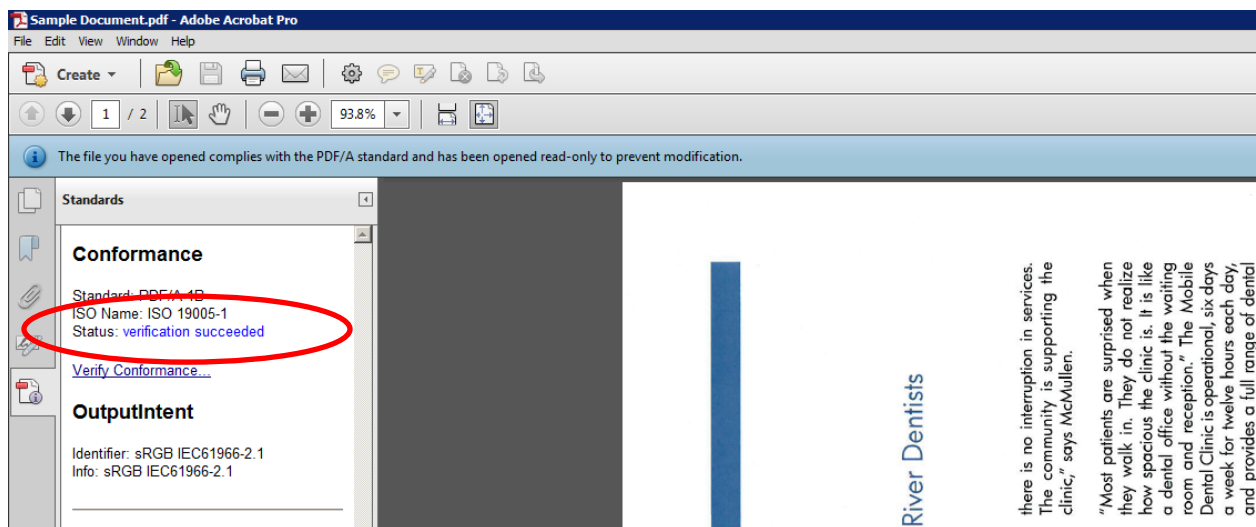
Continue with the next document following steps 1 to 8.

If the verification process fails, try the verification again. If the process continues to fail try one of the other methods of creating a PDF/A and/or contact your technical support for assistance.

References

1. College of Physicians and Surgeons of Alberta: The Advice to the Profession: Transition to Electronic Medical Records (EMRs), September 2004
2. Alberta Health Information Act Guidelines and Practices – 2011, Chapter 11, Pages 303 to 306
3. Alberta Government: Preparation of Record Schedules for the Disposition of Imaged Source Records, Version 3 March 2014
4. Province of British Columbia in RIM 5-10-02: Microfilm and Electronic Images as Documentary Evidence 2008-07-07
5. Microfilm and Electronic Images as Documentary Evidence CAN/CGSB-72.11-93 (National Standard of Canada)
6. College of Physicians and Surgeons of Alberta: Standard of Practice: Physicians' Office Medical Records, April 3, 2014
7. Digital Imaging and Communications in Medicine (DICOM): DICOM Standard Committee: Copyright 2014, DICOM Standard
8. Sustainability of Digital Formats, Planning For the Library of Congress, 26 January 2014. http://www.digitalpreservation.gov/formats/fdd/fdd000125.shtml