ISSUE
72
DEC19

The Dental Probe

The Maltese Dental Journal

ISSN 2076-6181

DENTAL ASSOCIATION OF MALTA
The Professional Centre,
Sliema Road, Gzira
Tel: 21 312888
Fax: 21 343002
Email: info@dam.com.mt

Editorial

By Dr David Muscat

Dear colleagues,

It seems that the main focus lately is on scanners and digital technology and that is where the future lies .. As such I will be presenting write ups of two recent events.

On Sunday 8th December the DAM will be holding an Advent Retreat at Tal Virtu Seminary. There will be a short discussion followed by mass.

The DAM Christmas party will be held on 21st December at The Hilton.

Between January 20th and 24th 2020 the Radiation Protection Board will be holding two 2 day courses in CBCT for dentists and you are kindly advised to keep these dates free. It will be mandatory for those dentists who operate CBCT equipment to attend these courses.

A charity event was held recently at Tal Markiz winery in aid of Inspire and this is covered in this issue.

This year the Smile For Health conference was excellent and I would encourage dentists to attend this event. On November 5th there was a seminar entitled "Road to elimination: Hepatitis C and other Blood borne Pathogens" at Salina Hotel for doctors and dentists.

The Discharge Permit Unit of the Water services Corporation shall be seeking to enforce the requirement of the Local Sewage Discharge Control Regulations (subsidiary legislation 545.08), first issued on 11th June 2002 via a licensing exercise. (Originally a legal notice 139 of 2002 as amended by Legal Notices 378 of 2005 and 426 of 2007).

The Dental Association of Malta has held discussions with the Discharge Permit Unit and will issue guidelines on how to comply with this legislation to its members in due course.

The cover picture is a picture of "Spinola Bay and Love Sign" by Dr Noel Manche.

Have a great Christmas.

Best regards,

David

Dr David Muscat B.D.S. (LON)
Editor / Secretary, P.R.O. D.A.M.

Above: The Smile for Health Conference 2019

Below: INSPIRE EVENT AT MARQUIS WINERY – Dr David Muscat Secretary DAM, checking the winning ticket for the Virtu Ferries free tickets prize won by Drs Melanie Cefai and Clementine Dalli at the excellent Inspire event at il-Markiz winery in aid of Inspire on Saturday 26th October 2019. The event was organized by Dr Lino Said (Spiritual and religious DAM coordinator) at Il-Markiz Winer and a generous sum of 1,200 euros was collected in aid of this charity.

Advertisers are responsible for the claims they make in their ads and the opinion of the advertisers and editors of articles in the issue are not necessarily the opinion of the DAM.

THE 3 SHAPE TRIOS EVENT

BY PAGE TECHNOLOGY AT SAN ANTON PALACE

Summarised by Dr David Muscat

On Friday 15th November Dr Ornella Delli Rocili Chiabera, Trios Global Training and Appliance Specialist gave a presentation to a large audience at San Anton Palace. The new 3Shape Trios scanner was presented.

The scanner is the beginning of a digital journey. It is more than just a digital impression.

The Trios 3 Basic is the entry level intraoral scanning solution and is a simple scan and send to workflow.

The 3 Shape Trios is wireless and allows for Trios patient monitoring,treatment simulator as well as a smile design and Trios patient specific motion. In house apps are an add on option.
The Trios 4 has an additional feature: Caries diagnostic.

Surface caries may be detected using in built fluorescent technology and possible caries identified with colour coded data.

Interproximal caries uses transillumination smart tips to identify interproximal caries. So one does not need to take radiographs.

The latest system has wireless innovation. It can also record different bite positions and highlights occlusal contacts for dynamic patient specific articulation.

One may also take a shade with the system and can engage the patient in this.
Research has shown an excellent Trios accuracy compared to conventional impressions.

The all scan technology allows for simplified scanning and will remove unnecessary soft tissue as one scans and this simplifies the procedure.

There are 20,000 restorative labs one may communicate with.

Continues on page 6.

Continues from page 5.

There are 80 implant companies, 40 clear aligner providers and six sleep appliance partners one may avail oneself of.

One may use a system exclusive to Trios re post and core and full and partial dentures.

One may use the system for crowns, bridges, veneers, inlays, onlays as well as for abutments, implant bridges and bars, clear aligners and sleep appliances. One may also go beyond just scanning and use Trios Move where one may interact with patient and display their scans and patients may view their dynamic treatment proposals on their mobile device using the My3Shape app, and they may discuss with friends and family.

Another great feature is being able to show patients a proposed 3Shape Smile Design where you can predict the result and enhance patient acceptance.

The 3Shape Trios Treatment Simulator may be used to show patients their present dentition compared to the expected results of orthodontic treatment.

One may also produce appliances and prosthesis in house using 3 Shape Trios Studio apps with seamless integration.

The 3 Shape Clinicare allows one to get upgrades, online support and training.

The 3 Shape Community allows one to connect and network with ones 3 Shape digital peers around the world and access training materials.

The 3 Shape Orthodontic solutions has the facility of an indirect bonding studio, a 3D Orthodontic planner, a 3 shape Splint studio as well as a 3 Shape clear aligner studio.

THE DS PRIMESCAN DIGITAL INTRAORAL SCANNING EVENT

BY DENTSPLY SIRONA AND BART ENTERPRISES AT THE VILLA, ST JULIAN'S ON WEDNESDAY 30TH OCTOBER 2019

Summarised by Dr David Muscat

The lecture was presented by Dr Roberto Molinari who showed a captivated audience four excellent cases which he carried out using the scanner.

The Primescan is a perfect starting point for digital workflows. The Primescan AC with connect software supports the connection to established partner workflows and the Cerec Primesan Ac with Cerec software supports full chairside workflows for single visit dentistry.

Data is captured in high resolution and quickly processed. It allows indications for single tooth to full arch treatments.
The dynamic depth scan technology allows sharpness even up to a depth of 20mm and in hard to access areas.

It is a fast scan with a smooth scan flow. There are seamless data transfer flows to labs and other third parties.

Autoclavable and disposable sleeves are available.

There is a user friendly movable touchscreen and touchpad.

Complete 3D scan models may be displayed immediately. Due to the increased field of view one may visualize large areas with less sweeps and with immediate precision.

BISPHOSPHONATES AND OTHER ANTI-RESORPTIVE MEDICATION

– a growing concern for dental treatment

By Dr Rebecca Schembri Higgans

INTRODUCTION

'Medication related osteonecrosis of the jaw' (MRONJ) was first described in 2003, in a patient receiving intravenous bisphosphonate treatment as part of the management of multiple myeloma. The original term used to describe the condition was 'Bisphosphonate related osteonecrosis of the jaw'.

However later on it was recognised that it is not just bisphosphonate drugs that have the ability to precipitate osteonecrosis of the jaw; other forms of anti-resorptive medication (ARM), such as chemotherapeutic agents, hormonal preparations combined with corticosteroids, human monoclonal antibodies, and angiogenesis inhibitorscan also cause osteonecrosis of the jaw.

WHAT ARE BISPHOSPHONATE DRUGS?

Bisphosphonates are drugs derived from pyrophosphoric acid. The type of bisphosphonates most commonly used at present are Nitrogen containing. Examples include alendronate and risedronate for oral use, and pamidronate and zoledronate for intravenous use.

Bisphosphonate drugs are used in the management of a variety of medical conditions.

Indications for use include management of malignant disease such as cancer-treatment induced bone loss, bone metastases and hypercalcaemia of malignancy, as well as management of non-malignant disease such as osteoporosisand Paget disease of bone.

Bisphosphonate drugs exert their anti-resorptive effects via a number of mechanisms. These include suppression and reduction of bone resorption by osteoclasts, as well as direct prevention of the recruitment and function of osteoclasts. They also indirectly stimulate osteoblasts to produce inhibitors of osteoclast formation.

Furthermore, they selectively adhere to and are retained within bone before endocytosis within osteoclasts during osteoclast-mediated bone mineral dissolution and matrix digestion, and then induce cellular apoptosis of the osteoclast once ingested. The high affinity for hydroxyapatite gives the drug the ability to accumulate within bone and persist for a significant amount of time.

It is estimated that the effects of bisphosphonates on bone can continue for up to three years after the last administration.There is also some evidence that these drugs can inhibit angiogenesis.

WHAT IS DENOSUMAB?

Denosumab is a human monoclonal antibody. Its mode of action is different from bisphosphonates; it inhibits osteoclast function and associated bone resorption by binding to the receptor activator nuclear factor κβ ligand (RANKL). Denosumab does not bind to bone and its effects on bone turnover diminish within nine months after administration.

There is a large body of evidence with regards to the efficacy of Denosumab. Three major studies - DECIDE, DEFEND and FREEDOM studies all show that Denosumab significantly increases bone density. Furthermore, Denosumab has been demonstrated to be more effective than zoledronic acid in increasing bone mineral density and inhibiting bone remodelling in postmenopausal women with osteoporosis who had previously received oral bisphosphonate treatment, and in preventing adverse skeletal related events in patients with bone metastasis.

WHAT IS MRONJ?

For the diagnosis of MRONJ to be established, there are three criteria that must be satisfied:

i. There is an area of exposed bone, or bone that can be probed through an intraoral or extraoral fistula, in the maxillofacial region that has persisted for more than eight weeks.
ii. The patient has a history of treatment with anti-resorptive or anti-angiogenic drugs.
iii. There is no history of radiation therapy to the jaws or no obvious metastatic disease to the jaws.

The pathogenesis of MRONJ is hypothesised to be suppression of bone turnover in conjunction with inhibition of angiogenesis, toxic effects on soft tissues, inflammation or infection. The cause of MRONJ is likely to be multifactorial, having both genetic and immunological factors. Several diagnostic aids can be used to supplement the clinical diagnosis of MRONJ. These include dental radiography such as DPT, CBCT, MRI and bone resorption biomarkers.

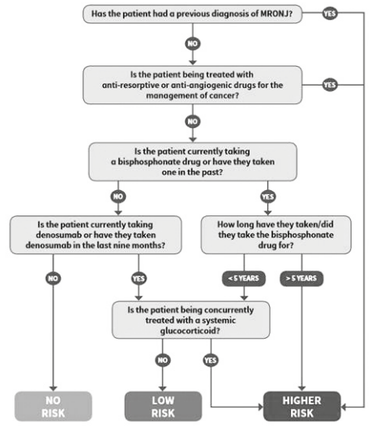
WHAT ARE THE SIGNS AND SYMPTOMS OF MRONJ?

These include delayed healing after a dental extraction or other dentoalveolar surgery, exposed bone, pain, infection of the surrounding soft tissues and swelling, numbness or paraesthesia. Patients may also report discomfort, pain or altered sensation without exposed bone being present. Tooth mobility, tooth loss and bad breath can also be signs of MRONJ. However, MRONJ may sometimes be asymptomatic, with osteonecrotic lesions being an incidental finding.

WHAT ARE THE RISK FACTORS FOR MRONJ?

The underlying medical condition is one of the most important risk factors for the development of MRONJ. Patient with malignancy are at an increased risk of development of MRONJ as compared to patients with non-malignant disease of bone. The estimated risk of MRONJ for patients with malignant disease is 1%, while that of patients with osteoporosis is estimated to be 0.1%.

The concurrent use of ARM such as anti-angiogenic drugs for the management of malignant disease, as well as higher potency drugs used (typically administered intravenously) contribute to this increased risk.



Scottish Clinical Dental Effectiveness programme (2017) Risk Assessment

The cumulative exposure of the patient particularly to bisphosphonate drugs is another risk factor, taking into account the dose and number of administrations since the start of treatment. This also includes previous treatment with ARM or anti-angiogenic drugs.

Another important risk factor is dentoalveolar surgery and any other procedure impacting bone. The evidence shows that for the majority of MRONJ diagnoses a recent dental extraction was reported. Dental trauma including trauma from ill-fitting dentures can also precipitate osteonecrosis. However, osteonecrosis of the jaw can also arise spontaneously, particularly at sites where there is dental infection or untreated periodontal disease.

The Scottish Dental Clinical Effectiveness Programme (SDCEP) published the following diagrammatic representation of the estimation of risk of MRONJ in 2017: Note how the risk of developing MRONJ based on repeated cumulative exposure to bisphosphonate drugs (without taking into account any other risk factors) is estimated as being low if the patient has taken the drug for less then five years and high if the drug has been taken for more than five years.

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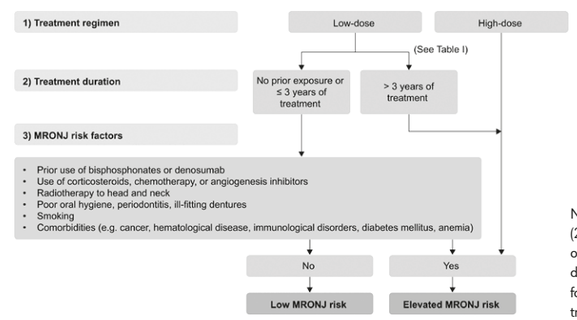

MRONJ, medication-related osteonecrosis of the jaw

Nicolatou-Galitis et al. (2019) 'Medication-related osteonecrosis of the jaw: definition and best practice for prevention, diagnosis, and treatment' Risk Assessment

BISPHOSPHONATES AND OTHER ANTI-RESORPTIVE MEDICATION

– a growing concern for dental treatment

Continues from page 11.

This contrasts with the risk assessment diagrammatic representation published by Nicolatou-Galitis et al. in 2019 in the literature review entitled 'Medication-related osteonecrosis of the jaw: definition and best practice for prevention, diagnosis, and treatment', where the patient is estimated as being at an increased risk of development of MRONJ if duration of treatment with bisphosphonates has exceeded three years (not taking into account any other risk factor for MRONJ).

Nicolatou-Galitis et al. (2019) 'Medication-related osteonecrosis of the jaw: definition and best practice for prevention, diagnosis, and treatment' Risk Assessment

MANAGEMENT OF PATIENTS INITIATING ARM

In the event of patients being referred for a dental review prior to starting ARM, it is important to know what is the indication for starting bisphosphonate or denosumab treatment (malignant/non-malignant disease).

Furthermore it is important to know whether the patient has been exposed to such drugs in the past, what is the time frame for starting ARM, if any other agents such as chemotherapy and anti-angiogenic drugs will be used in conjunction, what is the prognosis and overall health status of the patient, and who will ultimately discuss the risks of developing MRONJ with the patient and co-ordinate follow-up of oral care.

Prophylactic dental care prior to initiation of denosumab or bisphosphonate treatment is required so that teeth of poor prognosis can be extracted prior to starting treatment. Furthermore conservative endodontic and prosthodontic treatment of teeth with good prognosis, periodontal stabilization splints for teeth with grade I or II mobility in patients with good oral hygiene, treatment of occult pockets of periodontal infection, and necessary surgical oral procedures must be carried out as well so as to achieve a state of good oral health and prevent the need of dental extractions in the future.

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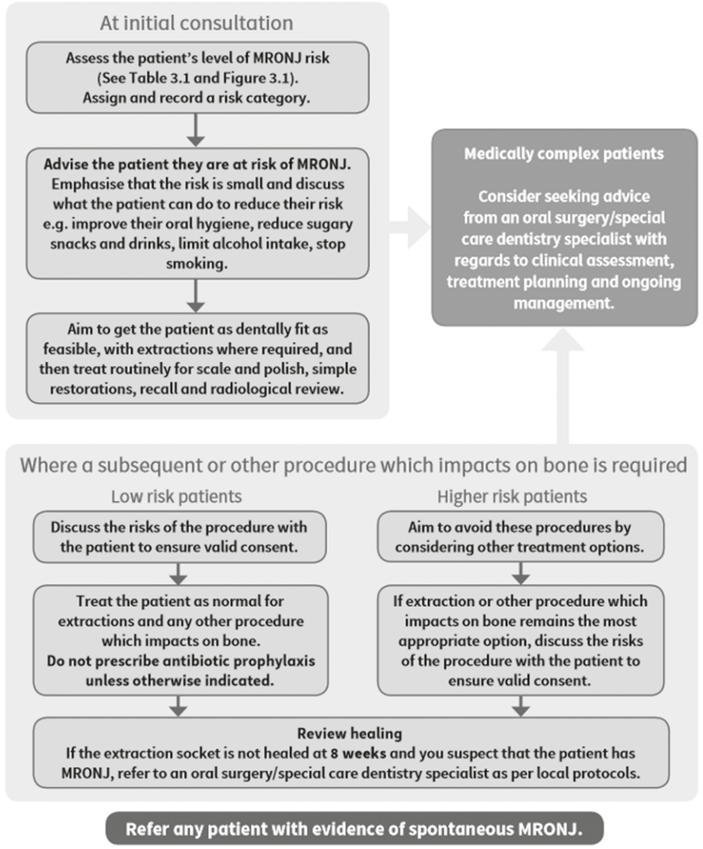


Scottish Clinical Dental Effectiveness programme (2017) management strategies

BISPHOSPHONATES AND OTHER ANTI-RESORPTIVE MEDICATION

– a growing concern for dental treatment

Continues from page 12.

Time should be given for adequate healing to take place prior to starting ARM if possible and the patient should be educated about the risk of MRONJ and how to maintain a good standard of oral health so as to help prevent MRONJ from developing.

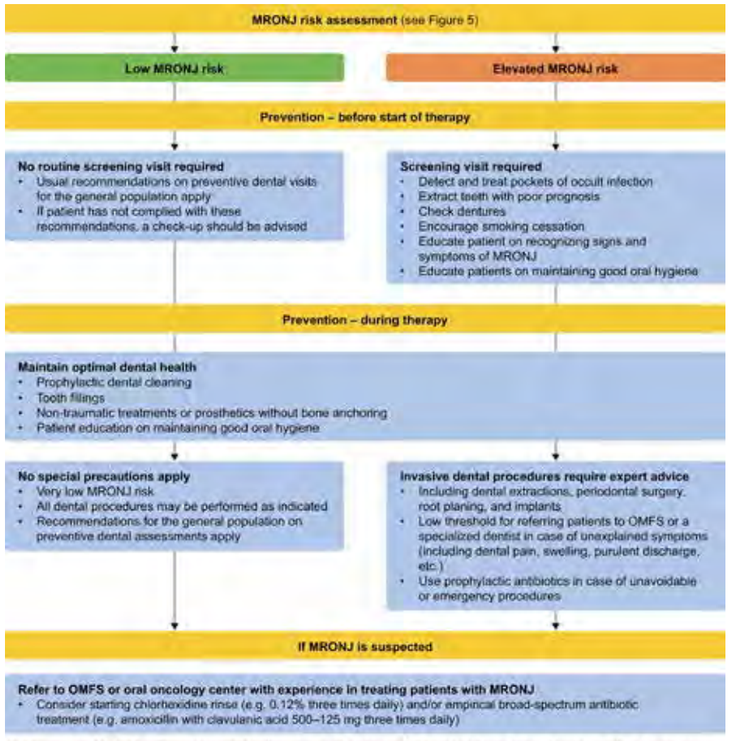
If the situation arises where a patient currently taking ARM requires a dental extraction, risk assessment for the development of MRONJ should be carried out and the patient informed of the risk.

For patients at low risk dental extractions can be carried out without any special precautions associated with extraction of the offending tooth given valid informed consent has been obtained from the patient.

For patients at high risk, extractions should be avoided where possible and other treatment options such as root canal treatment and coronectomy of unrestorable teeth favoured.

If dental extraction remains the only option for treatment, the SDCEP (2017) advocates against prophylactic mouth rinses and antibiotic therapy as there is no scientific evidence to support that such measures are effective in the prevention of MRONJ.

Furthermore judicious prescribing of antibiotics is emphasised due to the ever increasing problem of antibiotic resistance.Nicolatou-Galitis et al. (2019) despite this still recommend antibiotic prophylaxis if the dental



IV, intravenous; MRONJ, medication-related osteonecrosis of the jaw; OMFS, oral and maxillofacial surgeon; SC, subcutaneous

Nicolatou-Galitis et al. (2019) 'Medication-related osteonecrosis of the jaw: definition and best practice for prevention, diagnosis, and treatment'management strategies

extraction/surgical procedure cannot be avoided in high risk patients.

Dental practitioners should have a low threshold for referral of patients to an Oral Surgery and Maxillofacial Unit if MRONJ is suspected. Management strategies are outlined in the diagrams on page 12 and above.

MRONJ and dental implants
Low dose oral bisphosphonate treatment for osteoporosis usually does not compromise implant therapy. However there is a small risk of spontaneous MRONJ at implant sites for patients with implants commencing ARM, as well as MRONJ being observed both shortly after implant placement or at a significant time after the procedure for implants placed during or after bisphosphonate drug treatment. In addition, there is very little information available with regards to implant therapy and high dose antiresorptive medication treatment.

TREATMENT OF MRONJ

Treatment of MRONJ is difficult, thus prevention is imperative. Treatment is aimed at controlling the infection, progression of osteonecrosis and pain. Patients suspected of having MRONJ should be referred to an oral surgery/maxillofacial unit.

The need for continuation of ARM should be discussed with all healthcare professionals involved in management of the underlying disease for which ARM was prescribed. The evolution and severity of MRONJ, oncologic disease burden and activity, and ultimately the wishes of the patient should be taken into consideration.

DRUG HOLIDAYS

Drug holidays remain a highly controversial issue. The American Association of Oral and Maxillofacial Surgeons (AAOMS) advocate a two month drug holiday prior to dental surgery and after for patients taking oral bisphosphonates.

They also state that while suspending IV bisphosphonates has no significant short-term benefit in case of established MRONJ lesions, long term suspension of treatment may stabilize the affected area, reduce the risk of new sites being affected and alleviate the clinical signs.
The International ONJ Task Force states thatARMshould be withheld after invasive dental surgery in patients receiving high-dose bisphosphonates or denosumab. However both the AAOMS and International ONJ Task Force state that there is a lack of scientific evidence to support these recommendations.

The SDCEP advises against drug holidays. This is because the benefits of taking ARMto manage the underlying medical condition probably outweigh the small risk of development of MRONJ. In addition stopping the ARM treatment does not eliminate the risk of MRONJ development.

ALTERNATIVES TO BISPHOSPHONATE AND DENOSUMAB TREATMENT

Hormonal therapy with recombinant parathyroid hormone teriparatide appears promising. It exerts an anabolic effect on bone which stimulates bone remodeling.

This leads to an increase in bone mass, number of osteoblasts present and strength of bone. Studies regarding the efficacy of teriparatide have shown improvement in local findings and bone remodeling and improvement of patients' quality of life for those with MRONJ switching to hormonal therapy with recombinant parathyroid hormone teriparatide after taking bisphosphonates.

At present, teriparatide has been approved for the treatment of post-menopausal osteoporosis.

CONCLUSION

MRONJ is a relatively uncommon but potentially serious adverse event associated with ARM use, particularly with high dose and long term use of bisphosphonates or denosumab. Minimizingthe risk of MRONJ is critical to both prevent pain and discomfort and maximize the effect of treatment with ARM.

For this reason a preventive strategy is the best strategy. Dentists play a crucial role in the prevention of MRONJ through identification of patients at risk, thorough assessment, prophylactic dental care and close multi-professional teamwork.

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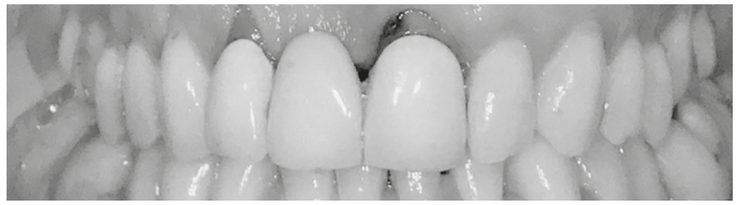
SOFT TISSUE MANAGEMENT AROUND PROSTHETIC CROWNS

By Dr Fahad Zafar BDS, MSc (Perio), MSc (Implant dentistry)
CCST European federation of Periodontology



In our daily clinical practice we come across a very common situation of gingival recession around prosthetic crowns and it's an aesthetic failure in young patients with high aesthetic demands. It worsen the situation if the patient has high smile line.

In the literature the occurrence of gingival recession has been reported around 40% after 1 year of crown delivery and it goes unto 71% in 10 years time (Valderhaug et al. 1980).

40% AFTER1 YEAR OF CROWN
71% IN 10 YEARS

THE TERM BIOLOGICAL WIDTH

To understand this problem first we have understand the anatomy of the dento gingival complex. The term biological width which was first coined by 1 from Dr. D Walter Cohen in 1962 at the University of Pennsylvania. But recently the term was changed to Supracrestal tissue attachment Biologic width describes the combined heights of the connective tissue and epithelial attachments to a tooth. The dimensions of the attachment were described in 1961 by Garguilo on cadavers. His pioneered work showed the connective tissue attachment having an average height of 1 mm, and the epithelial attachment also having an average height of 1 mm, leading to the 2 mm dimension often quoted in the literature for biologic width. In addition, he found the average facial sulcus depth to be 1 mm, leading to a total average gingival height above bone of 3 mm on the facial.

In 1994, Vacek did further cadaver studies on biologic width that helped give some insight into the clinical findings many of us had seen. He found that biologic width was relatively similar on all the teeth in the same individual from incisors to molars, and also around each tooth.

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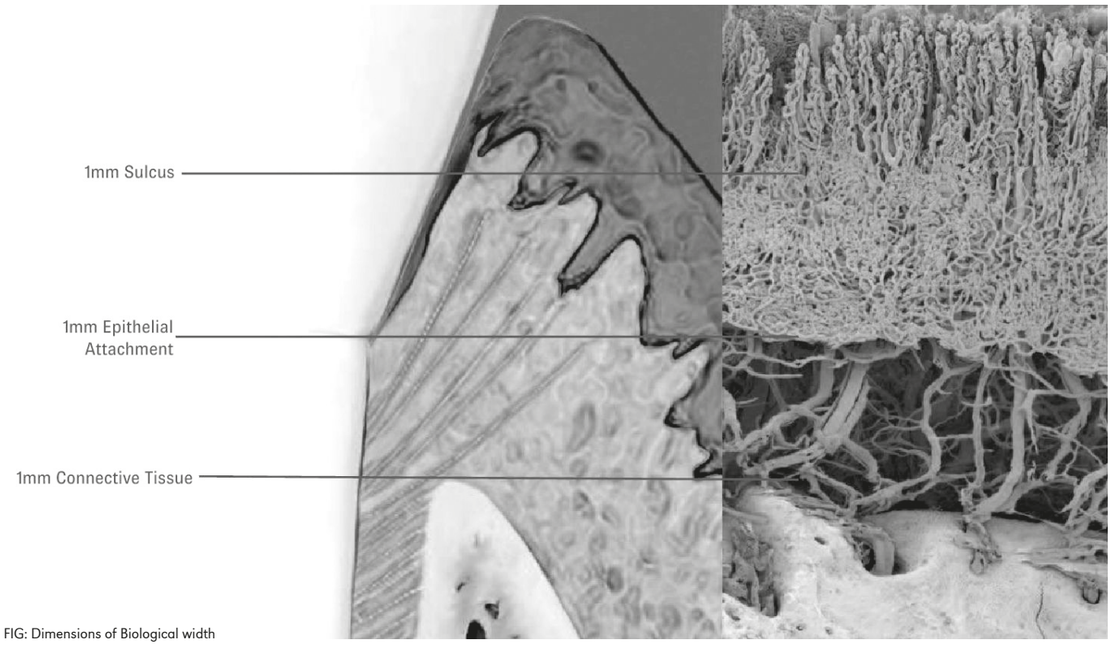


FIG: Dimensions of Biological width

SOFT TISSUE MANAGEMENT AROUND PROSTHETIC CROWNS

Continues from page 16.

He also found the average biologic width to be 2 mm as the Garguilo group did. What Vacek found that is clinically important was that biologic width varied between individuals, with some having biologic widths as small as 0.75 mm, and others as tall as 4 mm, but statistically the majority followed the 2 mm average.

The primary significance of biologic width or supracrestal tissue attachment to the clinician is its importance relative to the position of restorative margins, and its impact on post-surgical tissue position. We know that if a restorative margin is placed too deep below tissue, so that it invades the biologic width, and that will lead to inflammation and inflammation in turn leads to loss of attachment.

Clinically this attachment loss would lead to periodontal pocket formation in the inter proximal area and gingival recession on the facial surfaces.

The first option to consider when placing a restorative margin is to decide if the margin can be left supra or equigingival, or must be placed subgingival. If the margin can be placed supra or equigingival, the concerns over biologic width don't exist - assuming the gingiva is healthy and mature.

Today, if the tooth color is acceptable and there is no structural reason to extend below tissue (such as caries, cervical erosion, old restorations or a need to extend for ferrule), the use of a translucent material, such as Lithium Disilicate, can get an esthetically acceptable result without the need to go below tissue.There are times, however, when it is necessary to place margins below tissue, specifically if structural issues exist, the tooth is extremely discolored or you need to use a more opaque restoration such as zirconia or metal ceramics.

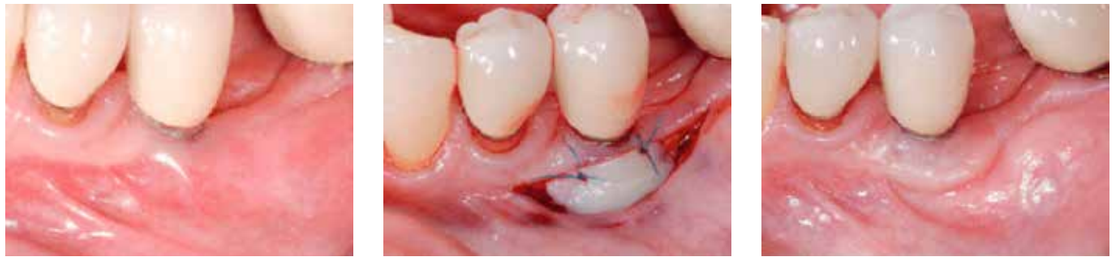
In these instances, a subgingival margin is necessary and the concern of going too far below tissue and violating the attachment exists. As described by Gargiulo 1961 biologic width is same for every patient (i.e. 2 mm), the solution to margin placement is simple: place the margin 2.5 mm from bone. This would be far enough away from bone that it didnâ€™t violate the attachment, but also leave the margin sub gingival, as the facial gingival margin is normally at least 3 mm above bone.

CONSIDERATION OF GINGIVAL BIOTYPE & KERATINISED TISSUE

Besides invasion of biological width the problem of recession around prosthetic crowns was also seen in areas where biological width was intact. In the literature two important factors have been discussed. First is presence of thick band of keratinised tissue and second is having thick tissue which better mask the dark crown margins.

In the past there was a general understanding in the scientific community that at least 2mm of keratinised tissue is important to maintain health around natural teeth (Lang & Loe et al 1972) But later on many other research papers showed that gingival health can be maintained without the presence of keratinised tissue if the plaque control is optimal (Lindhe and Nyman et al. 1980, Wennstorm et al 1987).

But the situation completely changes when talk about prosthetic crowns. The placement of a restoration in a sub gingival position favours sub gingival plaque formation and hence



Lack of keratinised tissue around the prosthetic crown. A FGG graft harvested from palate is placed on the facial surface of the prosthetic crown resulted in an adequate band of keratinised tissue

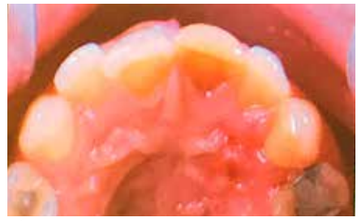
inflammation. The placement of a restoration in sites with a narrow zone of keratinised gingiva may, in the presence of sub gingival plaque , favours apical displacement of the soft tissue margin (Ericsson & Lindhe et al.1984). Now there is enough clinical evidence to support that maintaining adequate band of gingiva for intra crevicular margin restoration. Augmentation of keratinised tissue can be done with gingival grafts harvested from the palate.

Gingival Biotype or the thickness of tissue is also important to consider if we are planning for prothetic rehabilitation in the aesthetic area. There is stistcically significant relationship has been found between thickness of the tissue and the gingival sulcus depth. Thick biotype is characterised by an enhanced vertical dimension of the supra crystal tissue (Olsson & lindhe et al. 1993, Muller & Reinecke et al. 2000). The threshold between thick and thin biotype is 1 mm. If the thickness if in access of 1mm that means the thick biotype and ion the tissue is less then 1 mm in thickness a thin biotype is encountered.

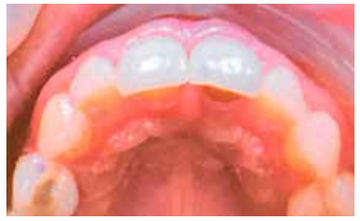
HOW TO IDENTIFY GINGIVAL BIOTYPE

Many techniques have been developed to assess the gingival biotype. Few are invasive and few are non invasive. There are two Invasive techniques:

1. Needle test
2. Use of CBCT scan



< 1mm



1.5 mm

Non Invasive techniques:

1. Periodontal Probe technique
2. Ultrasonic devices
3. Analysis to tooth shape
4. Presence of gingival recession

Once gingival biotype identified a treatment plan can be formulated. If the patient belongs to thin gingival biotype a gingival augmentation is indicated before prosthetic rehabilitation with crowns.

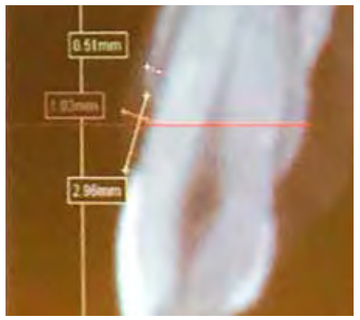
The technique was long devised by Raetske et al. 1984. A connective tissue graft harvested from palate can be inserted into the tunnel.

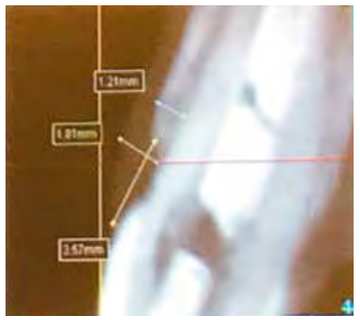
Continues on page 20.

A coloured periodontal probe can also be used to identify the gingival biotype

Analysis of tooth shape – Left: Thick Biotype; Right: Thin Biotype

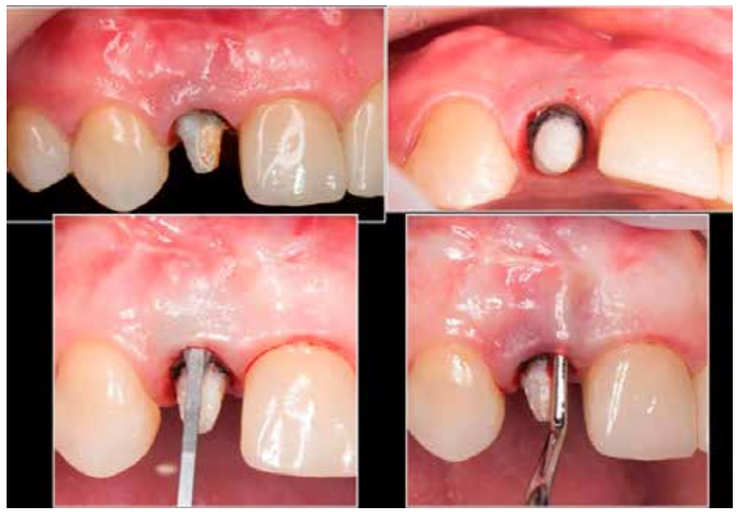
SOFT TISSUE MANAGEMENT AROUND PROSTHETIC CROWNS



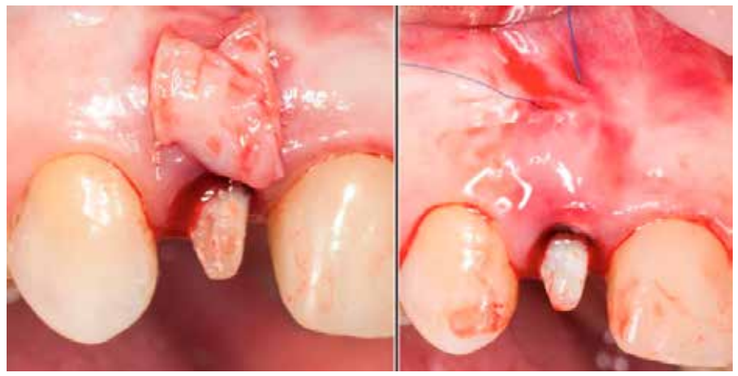


CBCT SCAN: CBCT scan be used to identify the gingival biotype

Presence of generalised gingival recession can be a sign of thin Biotype



A tunnel can be created through the gingival sulcus by using micro blades and special tunnelling instruments



A connective tissue graft harvested from the palate can be inserted in to the tunnel and secured by a couple of sutures

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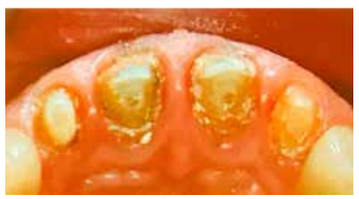
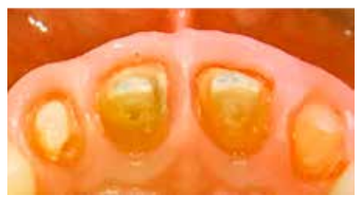




Covering localized areas of root exposure employing the "Envelope" Technique

Continues from page 19.

FULLY DOCUMENTED CLINICAL CASE

A 30 year old young lady presented to our practice with the complaint of dark margin showing around the prosthetic crown on the tooth No. 12. Which was delivered a couple of years ago.

Upon clinical examination patient had high smile line, Occlusal can't was present, there was imbalance in the position of the gingival margins. Specific to the tooth # 12 there were defective crown margins hence gingivitis.

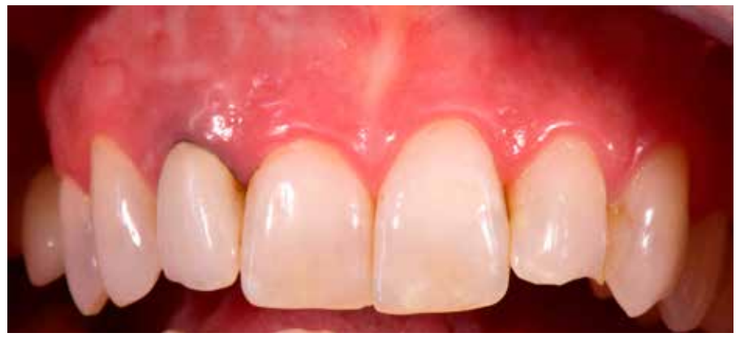
Before starting any treatment the first step is to control the inflammation and that was done by removing the old crown and replacing it wi a new provisional crown.

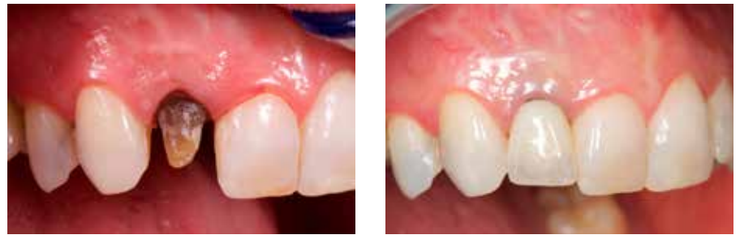
A surgical crown lengthening procedure was done to correct the imbalance of the gingival margin. A surgical template was constructed to help remove the excess tissue precisely. Old prosthetic margin was 3mm away from the alveolar crest.

After removal of the excess soft tissue bone remodelling was done recreate the biological width. Crown preparation was adjusted according to newly created dentogingival complex.

A permanent crown was fabricated after the healing period was over. Still slightly less but a dark crown margin is evident due to thin gingival biotype.

Continues on page 22.





Control of inflammation was done by replacing the defective crown with a new provisional crown

3 mm distance from the Bone Crest

Bone Remodelling

SOFT TISSUE MANAGEMENT AROUND PROSTHETIC CROWNS

Continues from page 21.

A second surgical session was planned to change the biotype following the same technique explained earlier.

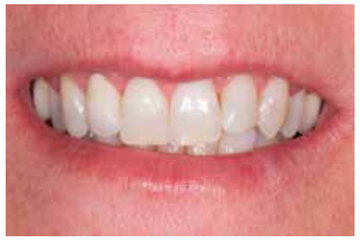
A tunnel was created through the gingival sulcus and a connective tissue graft harvested from the palate was inserted in to the tunnel and secured with simple sutures. Permanent crown was replaced. After soft tissue augmentation an aesthetically pleasant result was achieved.

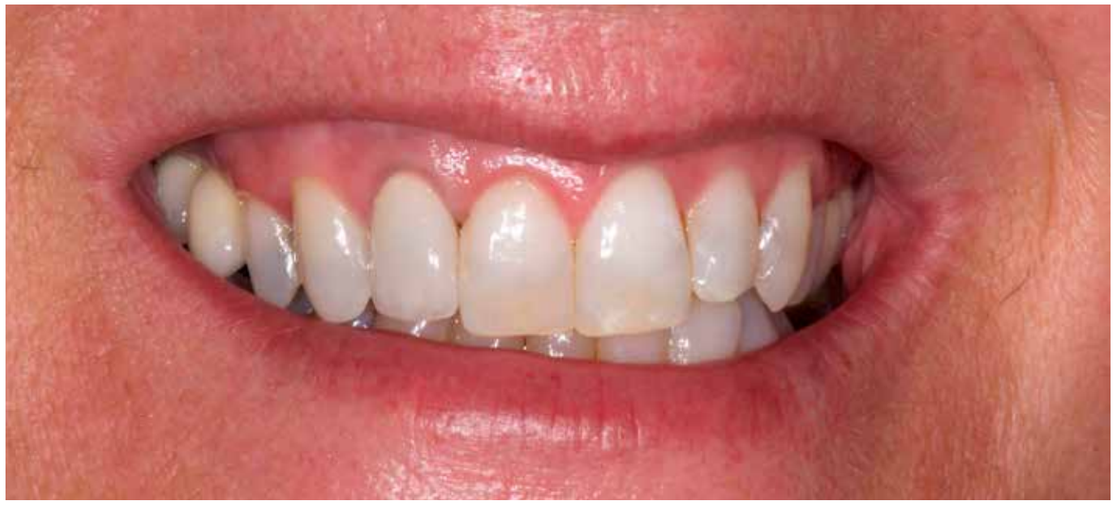
Bone Remodelling

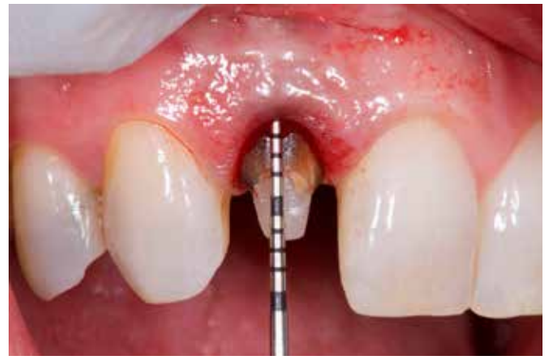
3 mm distance from the Bone Crest

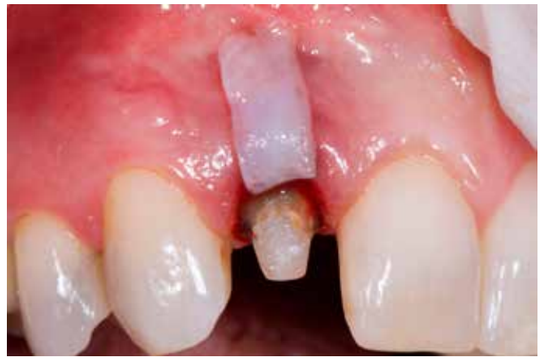
Healing

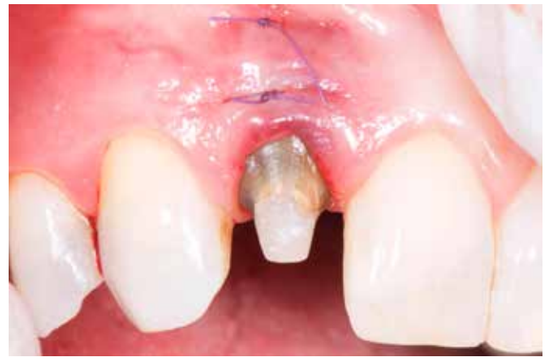
Permanent Crown

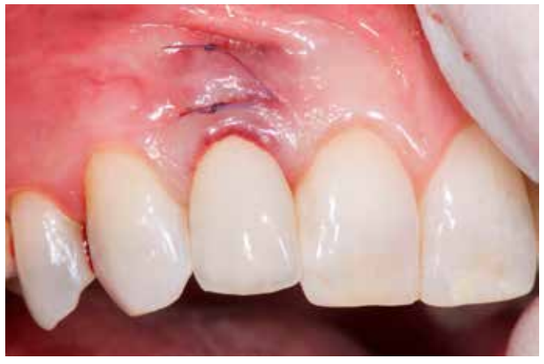


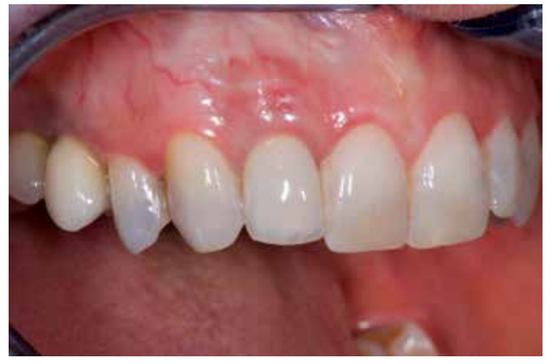


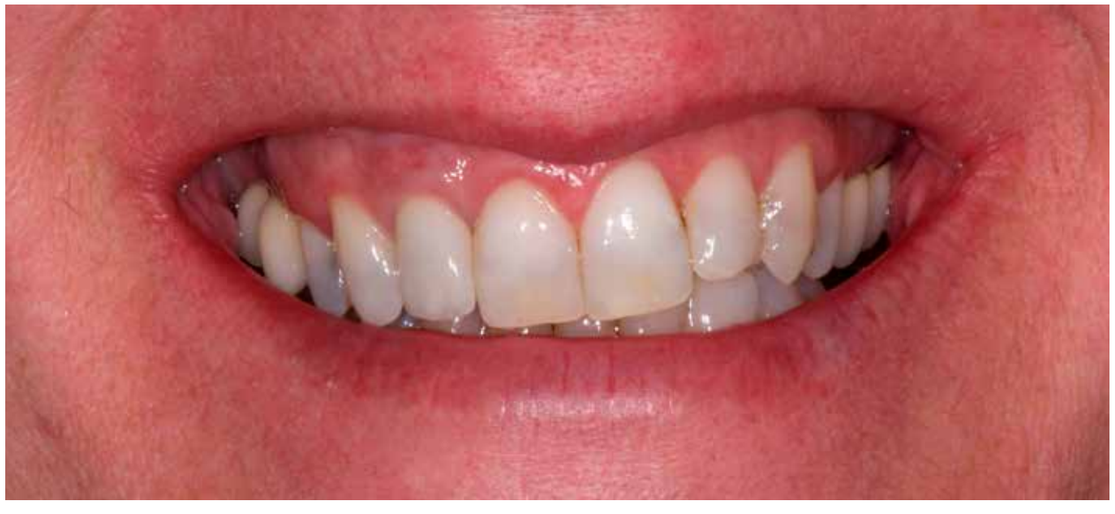






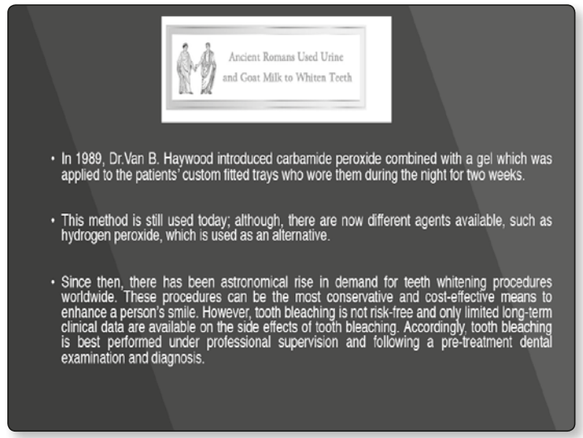


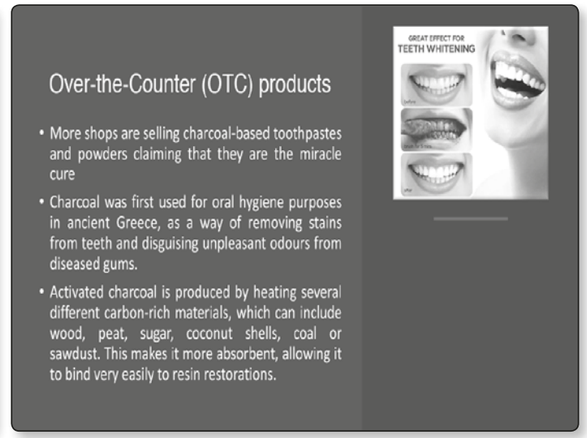


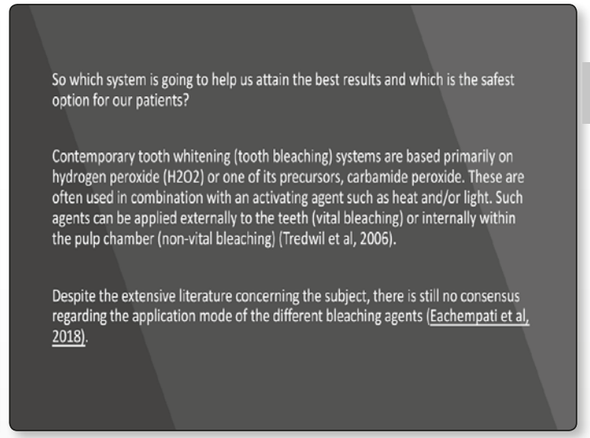


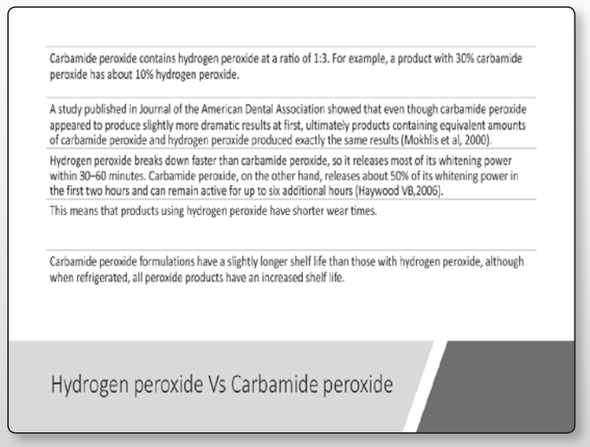
GREY AREAS IN TEETH WHITENING: WHERE DO WE CURRENTLY STAND?

Dr. Nicola McArdle BChD MFDS RCS Eng MSc Aesthetic and Restorative dentistry (Manch)









Continues on page 28.

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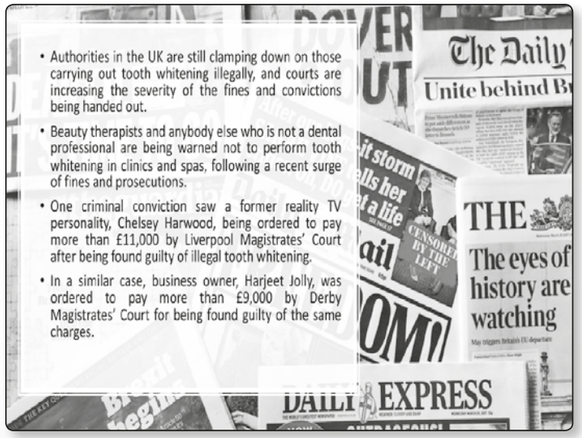
GREY AREAS IN TEETH WHITENING: WHERE DO WE CURRENTLY STAND?

Continues from page 25.

- The legislation relating to tooth whitening is laid down by the European Union and draws a clear line between the products that can legally be used for tooth whitening by dentists or under their direct supervision and the products that can be purchased by non-dental professionals.
- Professional teeth whitening products above 6 % hydrogen peroxide and 16 % carbamide peroxide were banned from the market. The only cosmetic OTC products available to consumers for at-home teeth whitening contain less than 0.1 % hydrogen peroxide.

- Reactions have been varied in different EU countries. Most of the countries are following and monitoring EU regulations completely. The current countries following these regulations are: the Netherlands, Belgium, Luxembourg, United Kingdom, Ireland, Slovenia, Croatia, France, Romania, Sweden, Finland, Norway and Denmark. Germany and France are following suit.
- The UK market also had an increase in home teeth whitening products. For in-office teeth whitening, UK and Irish dentists no longer saw a safe and effective alternative therapy.
- Other UK's Commonwealth States like India and Australia adapted the EU regulations to the local market and made plans to reduce hydrogen peroxide concentration down to 3 % instead of 6 %.
- On 31 October 2012, the EU Council Directive 2011/84/EU came into force in the UK. It sets out who can use what strength of product when carrying out tooth whitening.

- Authorities in the UK are still clamping down on those carrying out tooth whitening illegally, and courts are increasing the severity of the fines and convictions being handed out.
- Beauty therapists and anybody else who is not a dental professional are being warned not to perform tooth whitening in clinics and spas, following a recent surge of fines and prosecutions.
- One criminal conviction saw a former reality TV personality, Chelsey Harwood, being ordered to pay more than £11,000 by Liverpool Magistrates' Court after being found guilty of illegal tooth whitening.
- In a similar case, business owner, Harjeet Jolly, was ordered to pay more than £9,000 by Derby Magistrates' Court for being found guilty of the same charges.



The Regulations say that products containing or releasing up to 6% hydrogen peroxide can be used, as long as:

- Products of this strength are sold only to dental practitioners.
- A dentist has first examined the patient to make sure there are no risks or any other concern about their oral condition.
- For each cycle of use, first use is by a dental practitioner or under their direct supervision by a dental hygienist or dental therapist.

The General Dental Council in the UK takes the view that applying materials and carrying out procedures designed to improve the appearance of the teeth amounts to 'the practice of dentistry'.

- This was recently confirmed by the High Court when it overturned a magistrates court's decision to acquit Ms Lorna Jamous of the offences of practising dentistry and unlawfully carrying on the business of dentistry when not registered by the GDC.
- This decision confirmed that tooth whitening can only be provided by a qualified and registered dentist, dental hygienist or dental therapist working to the prescription of a dentist.

Under-18s

- The requirement that patients must be at least 18 years old has created an ethical dilemma for members who wish to act in the best interests of their patients but where the treatment is prohibited by the Regulations by virtue of the patient's age.
- In this scenario it is an individual clinical decision for the member whether to breach the Regulations to provide the treatment that the member considers is in the best interests of the child.
- The maximum penalty for breaching the Regulations is a sentence of imprisonment not exceeding six months.
- The General Dental Council's Position Statement on Tooth Whitening sets out that if it receives information or a complaint that a registrant is using a product in excess of 6%, in breach of the Regulations, the registrant may face fitness to practise proceedings and can expect the matter to be referred to the relevant Trading Standards department.

Non-vital walking bleach technique

It is recommendable to utilise 10–16% CP for the technique to stay within the European guidelines. The use of 10–16% CP (which is the equivalent of 3.4–5.4% HP) without heat is being advocated. There are no reported cases of external cervical resorption occurring with the lower strength CP or HP.

Opalescence™ Endo

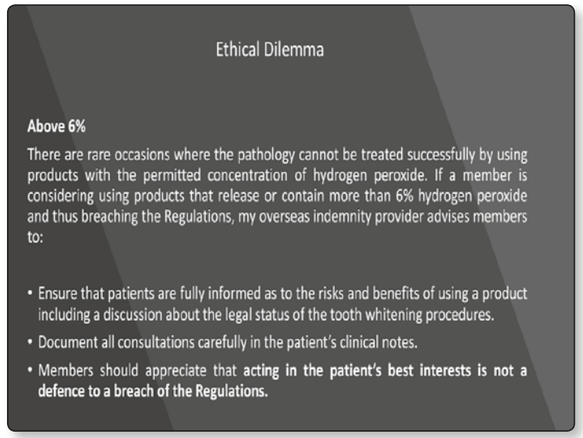
Applied In-Office

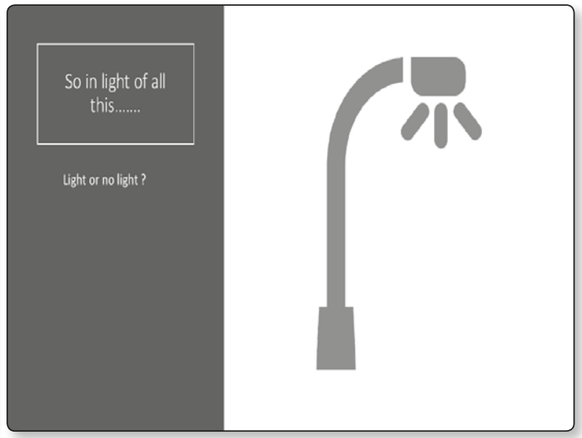
Opalescence™ Endo
Wear Time:
1–5 days per application
Active Ingredient:
35% hydrogen peroxide
Indications:
Dentist administered for internal whitening of non-vital teeth

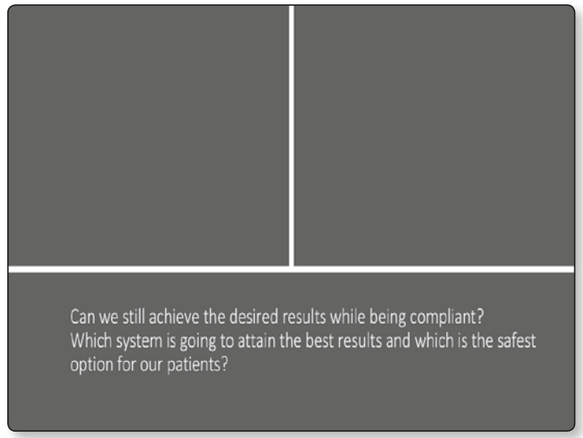
Continues on page 30.

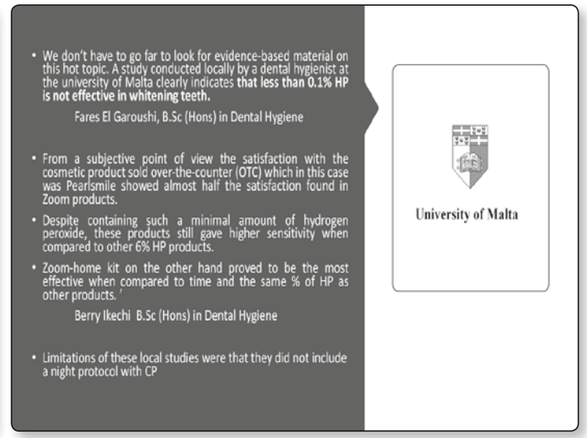
GREY AREAS IN TEETH WHITENING: WHERE DO WE CURRENTLY STAND?

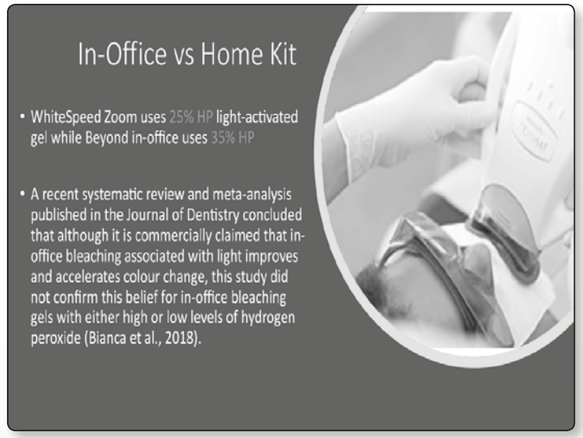
Continues from page 29.

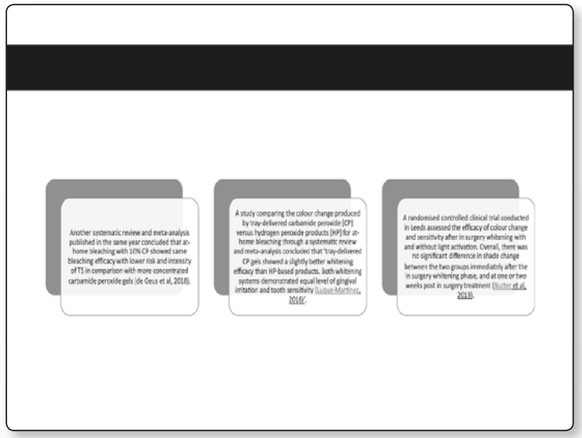


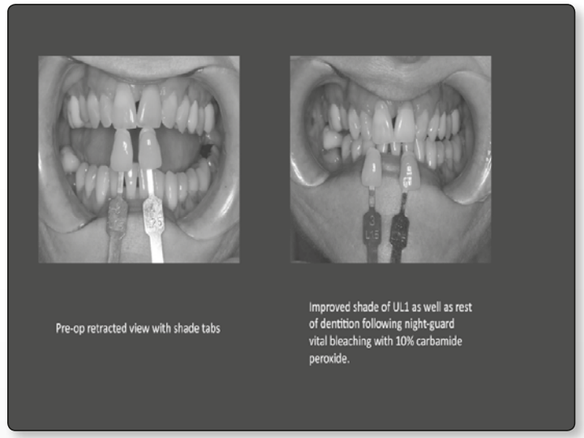


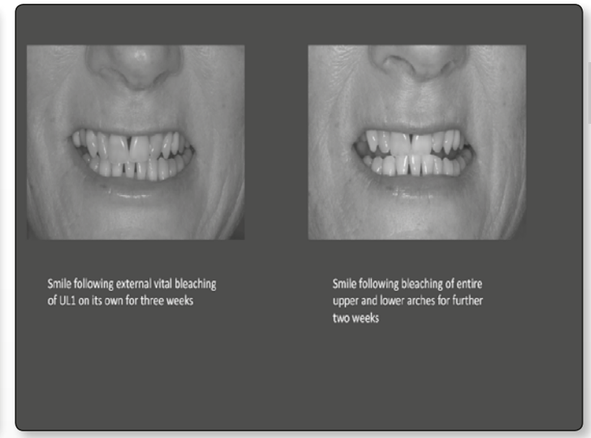


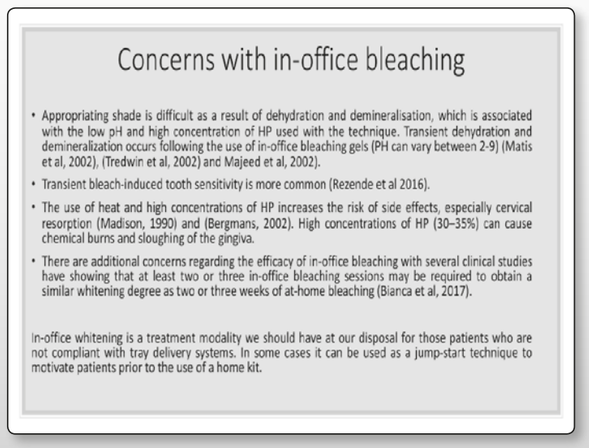


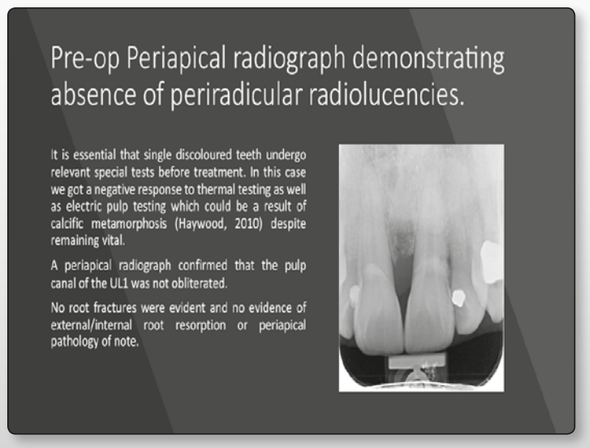


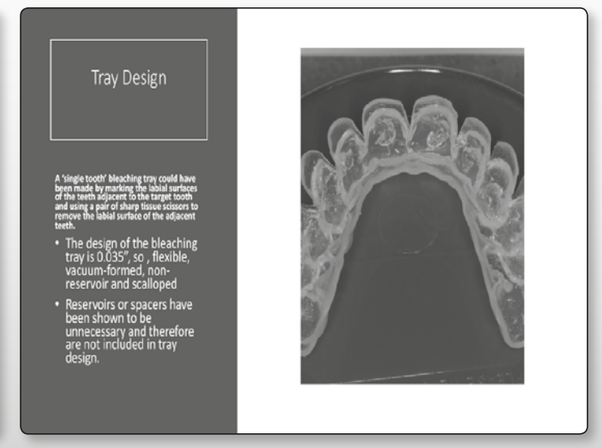












Continues on page 32.

GREY AREAS IN TEETH WHITENING: WHERE DO WE CURRENTLY STAND?

Continues from page 31.

Materials used

The bleaching agent of choice was 10% **carbamide peroxide** used in the past as an oral antiseptic (Magne et al., 1993) and (Sulieman et al., 2004). Tooth whitening with 10% carbamide peroxide is an effective and safe treatment (Haywood, 1992) when under a dental professionals' supervision. "Reported incidences of dentine sensitivity range from 15-65% of patients using 10% carbamide peroxide" (Albanai et al., 2015).

Casein phosphopeptide-amorphous calcium phosphate

Therapeutic Aesthetics with Amorphous Calcium Phosphate (CPP-ACP) GC Tooth Mousse for a week was recommended together with the use of desensitizing toothpaste rubbed onto the cervical necks of affected teeth (Sulieman, 2005) and (Greenwall, 2015).

What does the future hold?

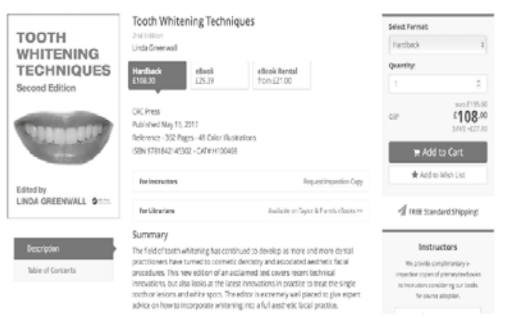
- In-office tooth whitening treatment using violet light emited diode (LED) (405 nm) is a novel bleaching method that causes less sensitivity while offering the same effectiveness as the gold standard (35% hydrogen peroxide, H_2O_2) (Santos et al, 2017).
- **Ozone**

Finally some food for thought.... Is it time for change?

Should teeth whitening only be carried out by registered dental professionals regardless of the products used?

Should we be doing more to protect the public from such industry driven treatments? Is it not our realm and responsibility as dental care professionals to liaise with law enforcement on this matter?

References



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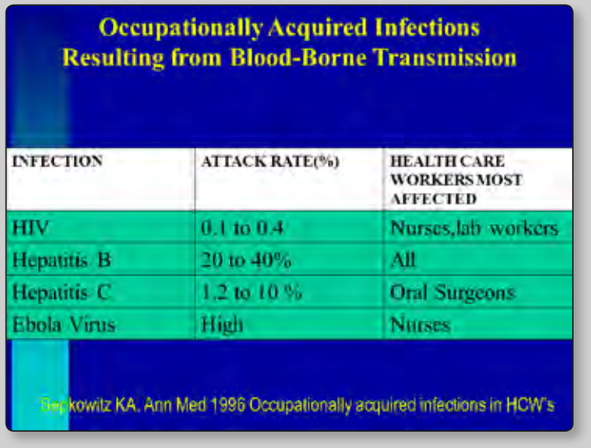
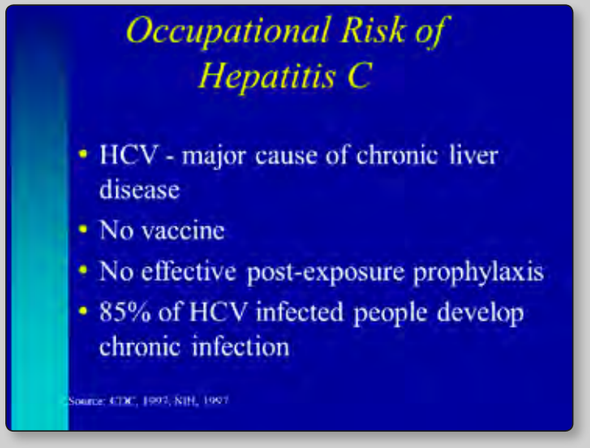
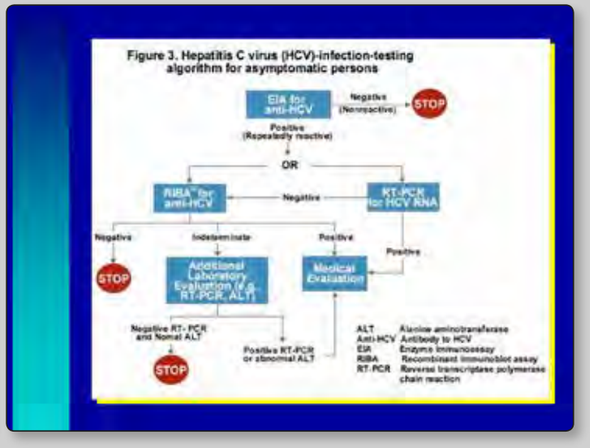
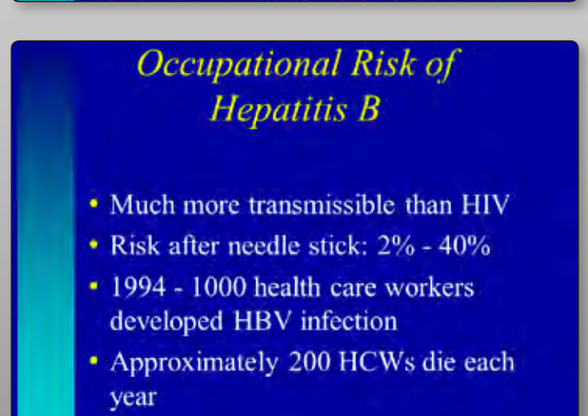
BLOOD-BORNE VIRAL INFECTIONS

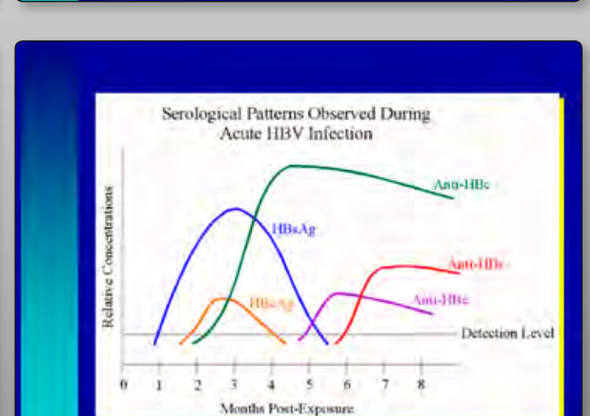
By Christopher Barbara
Pathology, Mater Dei Hospital

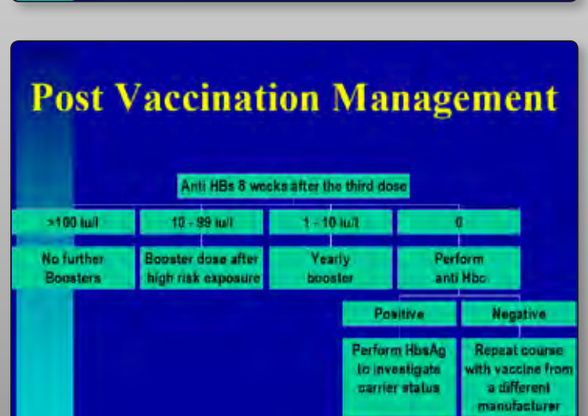


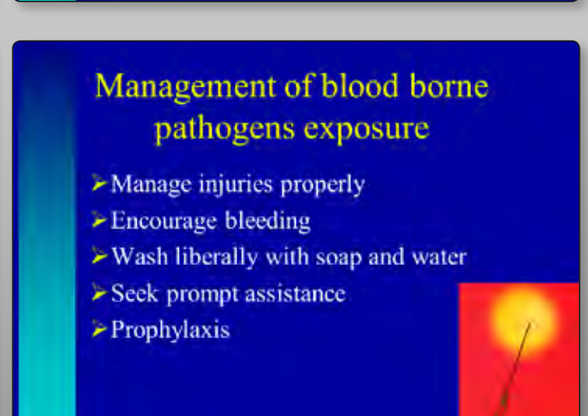












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BLOOD-BORNE VIRAL INFECTIONS

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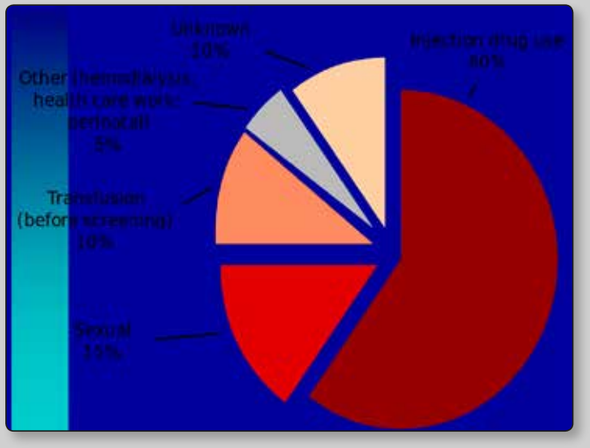
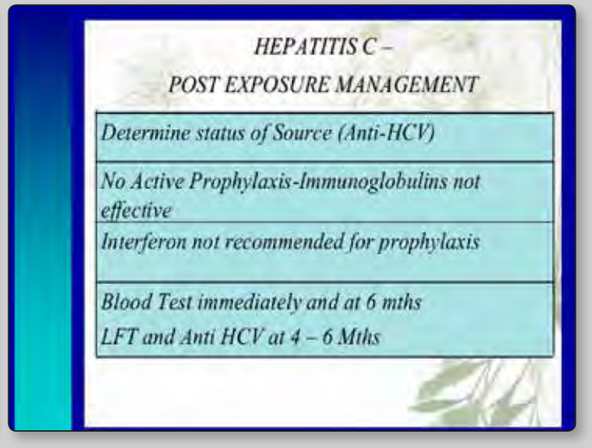
PATHOGEN	INFECTION RISK AFTER NEEDLESTICK*	POST-EXPOSURE PROPHYLAXIS (PEP) WHAT TO DO?	WHEN TO ACT
HIV	0.3%	A four-week course of a combination of either two or three antiretroviral drugs determined on a case-by-case basis	As quickly as possible, preferably within hours.
HBV	Approximately 0% with PEP; 6% to 30% without PEP	HBIG alone or in combination with vaccine (if not previously vaccinated)	Preferably within 24 hours, no later than seven days
HCV	1.8%	No recommendation	N/A

*After needlestick injury from a known positive patient source.
+HBIG-Hepatitis B immune globulin.
Source: Adapted from Exposure to blood: What healthcare personnel need to know. Centers for Disease Control and Prevention website.

Significant exposure

- Penetration of skin
- Splashing on mucous membranes with blood and other body fluids



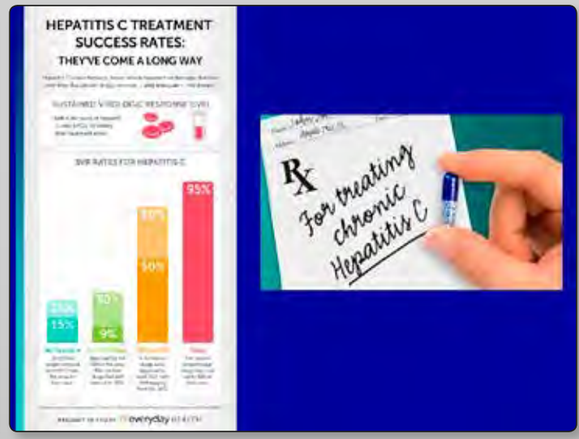


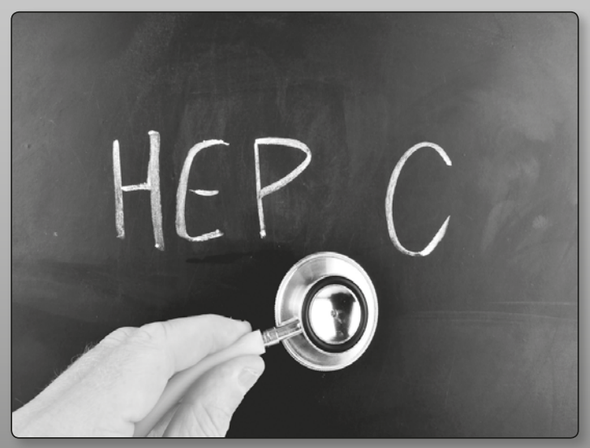
Vaccination and antibody response status of exposed workers[1]	Treatment		
	Source HBsAg+ positive	Source HBsAg+ negative	Source unknown or not available for testing
Unvaccinated	HBIG*×1 and initiate HB vaccine series#	Initiate HB vaccine series	Initiate HB vaccine series
Previously vaccinated			
Known responder[2]	No treatment	No treatment	No treatment
Known non-responder	HBIG x1 and initiate revaccination or HBIG x2* **	No treatment	If known high risk source, treat as if source were HBsAg positive
Antibody response unknown	Test exposed person for anti-HBs++ 1. If adequate[2], no treatment is necessary 2. If inadequate[3], administer HBIG x1 and vaccine booster	No treatment	Test exposed person for anti-HBs 1. If adequate antibody to HBsAg, no treatment is necessary 2. If inadequate antibody to HBsAg, administer vaccine booster and recheck titre in 1-2 months

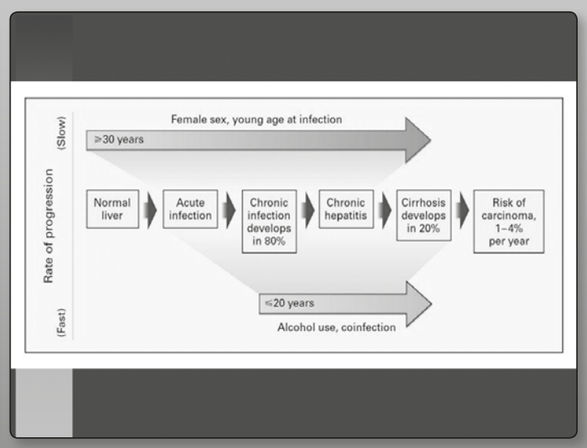
Vaccination of person exposed	HBsAg known positive source	HB status unknown	HBsAg known negative source
0 or 1 dose Hb vaccine pre-exposure	HB immune globulin + HB vaccine	Accelerated course of HB vaccine	Initiate normal course of HB vaccine
2 doses HB vaccine pre-exposure	HB immune globulin + HB vaccine	One dose of HB vaccine	Finish normal course of HB vaccine
3 doses HB vaccine pre-exposure	Check titer and manage according to result	Consider booster dose of HB vaccine if anti-HBs titre is unknown	No action necessary

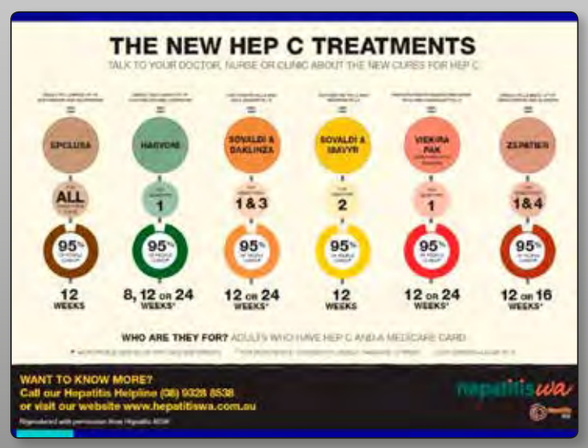
Hepatitis C

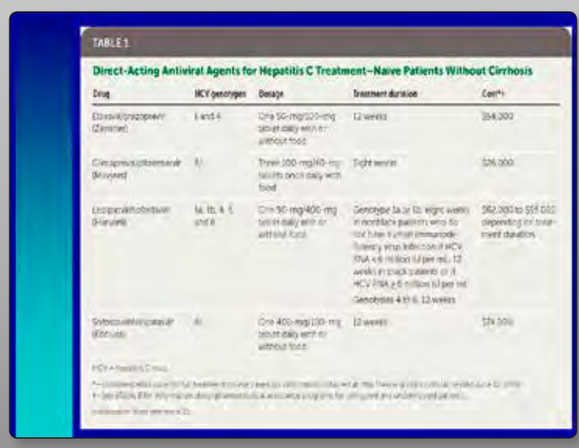
- Perform baseline and follow-up testing for anti-HCV and alanine aminotransferase (ALT) 4 – 6 months after exposure.
- Perform HCV RNA at 4 – 6 weeks if earlier diagnosis of HCV infection desired.
- Confirm repeatedly reactive anti-HCV results with supplemental tests.
- Post-exposure prophylaxis (PEP) not recommended.











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BLOOD-BORNE VIRAL INFECTIONS

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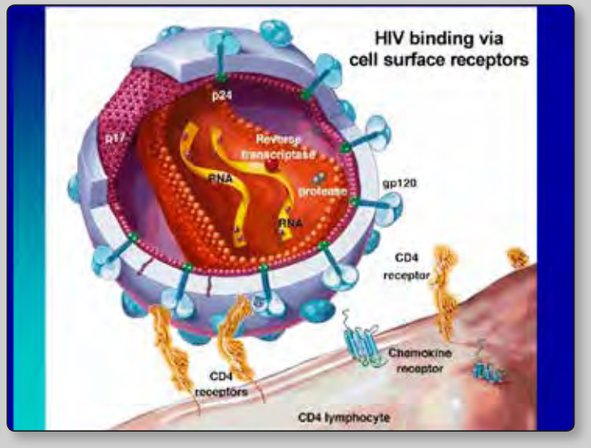
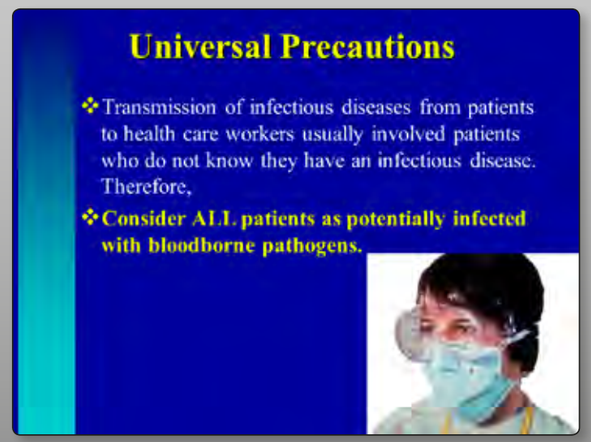


Prophylactic treatment of HIV exposure

Type of exposure	Source material	Antiretroviral prophylaxis	Antiretroviral regimen
Percutaneous	Blood		
	Highest risk	Recommend	AZT, 3TC & Indinavir
	Increased risk	Recommend	AZT, 3TC & Indinavir
	No increased risk	Offer	AZT & 3TC
	Other body fluid	Do not offer	
	Fluid with visible blood	Offer	AZT & 3TC
Mucous membrane	Blood	Offer	AZT, 3TC ± Indinavir
	Fluid containing visible blood	Offer	AZT ± 3TC
	Other body fluid	Do not offer	
Skin	Blood	Offer	AZT, 3TC ± Indinavir
	Fluid containing visible blood	Offer	AZT ± 3TC
	Other body fluid	Do not offer	



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