COVID-19 Impact on Dentistry

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Received Date: October 01, 2020; Accepted Date: October 30, 2020; Published Date: November 03, 2020

Mini Review

Healthcare workers are at continuous occupational risk, during this era of Corona Virus Disease-19 (COVID-19). Previously, due to severe acute respiratory syndrome (SARS) outbreaks, countless frontline health care workers were at risk and severe illnesses and deaths had been encountered [1]. Where COVID-19 has affected the way of people's life globally, it also has hugely influenced the health sector. Due to the necessary changes involved in the health sector, dentistry operating protocols has also been revised [2,3]. The protection of dentists and dental team is essential as they are in close contact with the aerosols generated by the dental procedures and the droplets from the patient's mouth in order to avoid having the risk of infectious diseases. Therefore, the dental services were limited to the essential urgent and emergency treatments listed in Table 1. Triaging, prioritizing, compromising and difficult choices of making decisions for dental patient's services are the routine reality of dentistry during this era. Dentists have been recommended to take several measures, to protect themselves and to minimise the procedures or operations, which produces droplets or aerosols. Henceforth, it is significant to have clear and easy guidelines to follow to manage the dental patients and for the safety of dentists. Inhalation, ingestion and direct contact with saliva droplets are the main routes of transmission for the virus. The survival of virus after exposure with the infected saliva can stay on hands, surfaces or object up to several days [4,5].

COVID-19 where brought the cessation of all non-urgent dental routine care provision, the virtual dental care came into being with the significant reduction in the dental routine practise and the provision of services and products. Dentistry has been classed as the most high-risk profession of aerosols production via Aerosol Generating Procedures (AGPs). Several government financial mitigations had been in place through the dental private and NHS practices, academic dentistry and even for the dental industry. Several new challenges and huge impact on patients and dentists has led to the development of new measures and strategies. COVID-19 spread where has no evidence of spread and assumed to be predominantly transmitted via direct contact and droplets, guidelines to safely practice dentistry and correct use of controlled precautionary measure is the way out in order to reduce the risk of transmission [4,6,7].

The three potential sources of airborne contamination during any dental treatment are through saliva, dental instruments and respiratory sources. Dental Unit Waterlines (DUWL) is the cause of spread through the organisms on dental instrumentation. AGPs are produced during the following procedures according to the most updated information available; high-speed air drills and inclusion of surgical drills, slow speed drills, run dry and wet, inclusion of surgical drills, ultrasonic hand pieces, three in one spray, air abrasion or sandblasting [8,9]. These particles can also be inhaled and might enter mouth or nose [10]. The particles with a diameter of 10µm or less than this can enter the respiratory tract and less than 4.25µm diameter can enter and reach up to deep parts of the lungs. The term splatter and aerosol was used by Micik and his colleagues in the dental environment for their pioneer aerobiology work. In their work they defined aerosols as the particles which are less than 50nm in diameter and the smallest of them are up to size of 0.5µm to10µm. Such small diameter of particles can remain in air for extended period of time before they get settled on to the surface or able to enter in to the respiratory tract small passages and therefore transmits infections at its greatest potential[11,12].

How to cite this Paper: Rabia Sannam Khan. COVID-19 Impact on Dentistry. C Den Sci Oral Biol. 2020;1(1):1001.

COVID-19 transmission therefore can occur through indirect, direct or both spread through the contaminated surfaces. Hence, AGPs control is crucial at these times. The guidance provided by the Nation's guidance suggested the restrictions for dental AGPs with suitable Personal Protective Equipment (PPE) and management in clinical practice having some differences in between them. It is being acknowledged by the Nation's guidance that the list they provide is not exhaustive and also states that' Not all dental procedure have been covered' [13]. Regulatory bodies such as England, Scotland, Northern Ireland and Wales. It is being stated by Public Health England (PHE) in its current guidance that dental turbines AGPs. There are two factors to be considered if the viral load is related to the aerosol or splatter production itself or within an aerosol or splatter which is produced that can endanger patients and clinicians. Therefore, even if the dental routine care will be given, AGPs should be limited and appropriate PPE and high suction volume will be used along with cleaning and decontamination after every dental procedure will be followed [14].

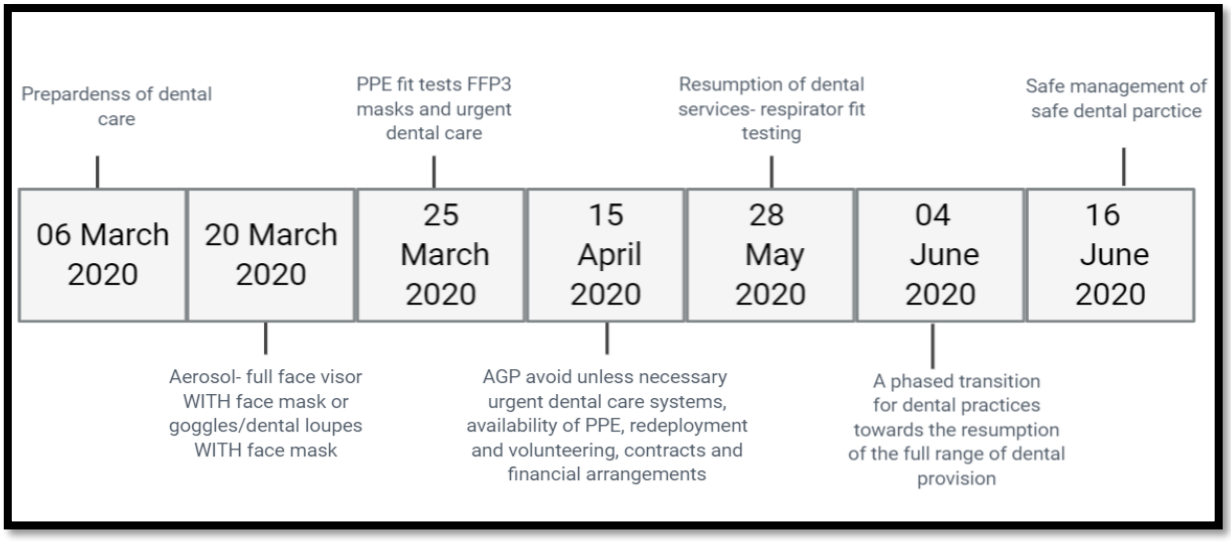

Figure 1: Timeline of guidelines during pandemic

The UK government introduced lockdown in response to the pandemic, on 23rd March 2020. This significantly impacted the dentist and their practises as well as the daily lives of the individuals. Dental practises were instructed to limit the scope of practise across the UK and access to only emergency and urgent care was introduced to deal with increasing demand of care. Redeem dental services station had a profound effect undoubtedly on the urgent care availability an impact on the oral health of the UK population. Government declared COVID-19 alert level 4 in March which indicated the risk of transmission and infectivity is severe. Damages introduced the COVID alert level with a 5 point system which was ranked according to the threat level of the virus on the scale of 1 safe, to 5 critical. This threat level system was based according to the medical and scientific data including the rate of infection that is R number find the number of infections recorded. Due to the weakness of the data used this system has been criticised because of the scale's subjectivity. Across the UK, by the end of May 2020 each administration introduced a road map separately in order to support the reopening of dental practises where safety remained the priority. According to the guidelines of FGDP, the risk of transmission of virus via droplets an aerosol the terms aerosol generating procedures and aerosol generated exposure complement each other.

In summary, according to CDO England, for the patient management consideration should be made such as minimised exposure risk with little intervention, AGPs should be avoided here possible, doors should be shut while carrying out any procedure, high speed suction and rubber dam should be used in order to reduce the contamination from droplet, in one visit dental treatment should be completed. For all AGPs, in order to prevent the transmission of aerosol, level 3 PPE is required. The fallow period according to the guidance from PHE is 60 minutes if the dental procedure is being carried out in single room having 6 air changes per hour (ACH) following the high AGPs. 60 minutes fallow period is recommended to reduce the potential risk of

transmission of virus through aerosols. After aerosol generating experience in dentistry is dependent upon the methods of ventilation and the change of air within the room for the clearance of infectious particles. The use of HVA, rubber dam, room dimensions, duration of aerosol generation and the type of dental procedure should be taken in account before carrying out. In conclusion, COVID-19 has impacted dental team, students, and staff who are at high risk to get infection. The role of dentist for the prevention and monitoring of the viral infection should be therefore redefined as innate protection is not available against COVID-19 and no vaccine is yet developed.

Table 1: Emergency and routine care in dental practice [15]

Dental/ Urgent Emergency Care	Routine Care Dentistry
Trauma involving oral or facial laceration, dentoalveloar injuries	Mild or moderate dental pain
Post extraction bleeding	Minor dental trauma
Orofacial swelling	Displaced bridges, crowns and veneers
Oral conditions that aggravate medical conditions (diabetes)	Bleeding gums
Dental and soft tissue infection that can raise the body temperature	Post extraction bleeding which is under control, scaling and polishing
Fractured tooth	Fractured posts, loose fillings, loose dentures, implant placement, endodontic procedures

References

1. Martina Ferioli, Cecilia Cisternino, Valentina Leo, Lara Pisani, Paolo Palange, Stefano Nava. protecting healthcare workers from sars-cov-2 infection: Practical indications. Eur Respir Rev. 2020;29:200068.
2. Chen W, Huang Y. To Protect Healthcare Workers Better, To Save More Lives. Anesth Analg. 2020;131(1):97-101.
3. Chirico F, Nucera G, Magnavita N. COVID-19: Protecting Healthcare Workers is a priority. Infect Control Hosp Epidemiol. 2020;41(9):1117.
4. Passarelli PC, Rella E, Manicone PF, et al. The impact of the COVID-19 infection in dentistry. Experimental Biology and Medicine. 2020;245(11):940-4.
5. Odeh ND, Babkair H, Abu-Hammad S, Borzangy S, Abu-Hammad A, Abu-Hammad O. COVID-19: Present and Future Challenges for Dental Practice. Int J Environ Res Public Health. 2020;17(9):3151.
6. Baghizadeh Fini M. What dentists need to know about COVID-19? Oral Oncology. 2020;105:104741.
7. De Stefani A, Bruno G, Mutinelli S, Gracco A. COVID-19 outbreak perception in Italian dentists. Int J Environ Res Public Health. 2020;17(11):3867.
8. Ge Z Yu, Yang L ming, Xia J Jia, Fu X Hui, and Zhang Y Zhen. Possible aerosol transmission of COVID-19 and special precautions in dentistry. Journal of Zhejiang University: Science B. 2020;21(5):361-8.
9. Zemouri C, De Soet H, Crielaard W, Laheij A. A scoping review on bio-Aerosols in healthcare & the dental environment. PLoS One. 2017.
10. Raghavan R, Middleton PR, Mehdi A. Minimising aerosol generation during orthopaedic surgical procedures- Current practice to protect theatre staff during Covid-19 pandemic. J Clin Orthop Trauma. 2020;11(30):506-7.
11. Szymańska J. Dental bioaerosol as an occupational hazard in a dentist's workplace. AAEM. 14(2)203-7.
12. Long RH, Ward TD, Pruett ME, Coleman JF, Plaisance MC. Modifications of emergency dental clinic protocols to combat COVID-19 transmission. Special Care in Dentistry. 2020;40:219-26.

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13. Gandolfi MG, Spinelli A, Zamparini F, Sambri V. Coronavirus contamination in dental clinics. New systems and operating devices. Dent Cadmos. 2020;88(6).
14. Proffitt E. What will be the new normal for the dental industry? Br Dent J. 2020;228(9):678-80.
15. Ball GE. Out-of-hours emergency dental services in Scotland - A national model. British Dental Journal. 2008;205:485-7.