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Long term COVID-19 Complications - A Multidisciplinary Clinic Follow-up Approach

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BACKGROUND

The COVID-19 pandemic has put a strain on the National Health Service secondary to the unprecedent number of acute admissions requiring high dependency (HDU) and intensive care (ITU) support due to respiratory failure and sequela of hypercoagulability.

The long-term complications of COVID-19 pneumonia are also beginning to emerge with growing clinical experience directing us to focus on integrating disease severity with the likelihood of long-term multiorgan complications alongside the psychosocial holistic care support requirements in these patients.[1-3]

We describe our multidisciplinary (MDT) observational experience at Gloucestershire Hospitals NHS Foundation Trust of delivering personalised holistic multicomponent interventions for all patients discharged from a HDU/ITU using a unified follow up pathway to address multi-organ complications and psychological trauma by setting rehabilitation goals and GP action plan to improve long term outcome of these patients.

METHODS

The MDT follow up consisted of an interprofessional carousal with review from intensive care, respiratory, therapy, psychology, pharmacy, dietician and community well-being colleagues using a unified proforma adapted to address individual patient needs.

37 patients were followed up over a 4 week period using this approach and long term complications of COVID-19 were identified and addressed by relaying the subsequent action plan to primary care (Image 1).

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Image 1 - GP Actions Plan

Insult / Ongoing Issue	Action required by patient	Action by GP
AKI Stage 1-3 / RRT: _____	Kidney surveillance will be required for the next few years	Annual U&Es with dipstick of urine and quantification of proteinuria e.g. protein: creatinine ratio (PCR) as increased risk of progressive CKD.
Lung injury / initially aim to prevent further infection	Ensure vaccinations to decrease risk of infections	Vaccinations: Annual flu and Pneumococcal vaccination if not previously given
Functional Status	6 minute walk test	Further investigations and onward referral to respiratory if desaturation, reduced exercise tolerance with raised MRC Dyspnoea score (Direct referral will be made from clinic)
Thin/loss of hair (Telogen effluvium)	Telogen effluvium link available on the Glosicu.org website Blood test to rule out other treatable causes	Further advice available from British Dermatology society regarding Telogen effluvium GP Please complete TFTs/iron studies
Extended thromboprophylaxis	Blood thinning medicines to treat clots	Referral to respiratory if suspicious of chronic thromboembolic disease
Sleep dysfunction	Keep Sleep diary try to ensure good sleep hygiene on amitriptyline sleeping better	To consider OSA as a possible underlying pathology if doesn't improve Keep under review
Flying Am I fit to fly?	https://www.caa.co.uk/Passengers/Before-you-fly/Am-I-fit-to-fly/Health-information-for-passengers/Getting-medical-clearance-to-fly/ If you desaturations <92% during/after your 6 MWT that would indicate the potential need for 02 on a flight.	https://www.caa.co.uk/Passengers/Before-you-fly/Am-I-fit-to-fly/Guidance-for-health-professionals/Assessing-fitness-to-fly/
Brachial Plexus/ Other Nerve Injury	Engage with Rehabilitation	To follow up on technician studies by neurophysiology. (Direct referral will be made from clinic)
Pharmacy	Liaise with pharmacy to understand the rationale of administered medications	GP monitoring and review medication _x_ In 2-3 months time.
Mental health/Delirium /Reduced concentration	Perform MOCA Test	Needs follow up/ memory screening (MOCA Score – Montreal Cognitive Assessment). We have signposted and introduced to community wellbeing service
Family	Trying to get engagement with available services such as Lets Talk, Cotswold community well being, Your circle etc	Encouraging participation and referral to some of these support groups
Other		Encourage uptake of Healthy Lifestyle Service support Ki-Active offered

RESULTS

The proportion of ongoing biopsychosocial complications identified from the MDT follow up of COVID-19 patients are summarised (Image 2 - Table 1).

Onward referrals for subspecialist input were made from clinic and action plans relayed to primary care in all patients.

Image 2 - Multidisciplinary Follow up Clinic Findings

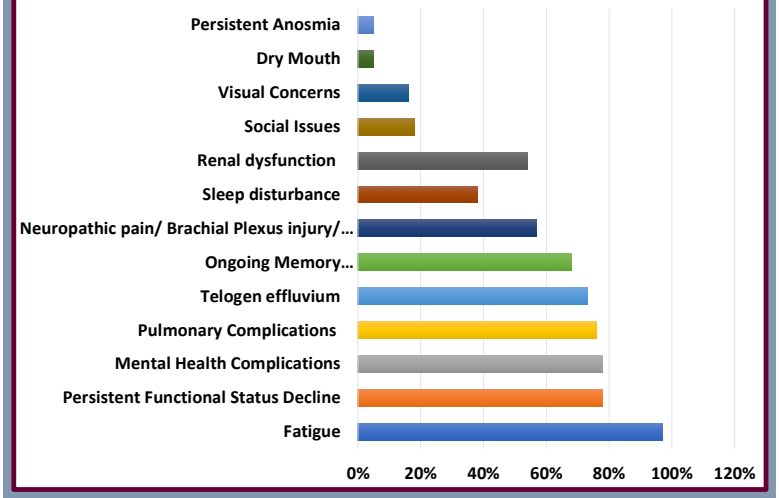

Table 1. Multi-disciplinary Follow up Clinic Findings in COVID-19

Fatigue	97% (n=36)
Persistent Functional Status Decline	78% (n=29)
Mental Health complications including Post traumatic Stress Disorder	78% (n=29)
Breathlessness - Pulmonary Complications including Dysfunctional breathing/Venous thromboembolic Disease/ Persistent pulmonary Infiltrates	76% (n=28)
Telogen effluvium	73% (n=27)
Ongoing Memory impairment/Concentration issues	68%(n=25)
Neuropathic pain/ Brachial Plexus injury/ Brain injury	57% (n=21)
Sleep disturbance	38% (n=14)
Renal dysfunction (AKI 1-3) with ongoing surveillance requirement	54% (n=20)
Social Issues	18 % (n=7)
Visual Concerns	16% (n=6)
Dry Mouth	5% (n=2)
Persistent Anosmia	5% (n=2)

DISCUSSION AND RECOMMENDATIONS

Long term complications of COVID-19 may cause substantial morbidity. Our observations demonstrate a range of persistent clinical sequalae on follow up. Fatigue and breathlessness were expected but the persistent decline in functional status with impaired exercise tolerance, mental health decline with poor memory and concentration despite normal cognitive assessment scores alongside connotations associated with hair loss, visual disturbance and persistent anosmia were less likely to be anticipated. Further studies are clearly required to evaluate the long-term effects of COVID-19 in patients.

We advocate a multidisciplinary follow up approach to enhance the rehabilitation and outcomes in patients with severe COVID-19 previously treated in a HDU/ITU setting. This will allow us to better address the potential life limiting complications by implementing personalised holistic multicomponent interventions including social prescribing to deliver high quality care for patients and their families. Additionally failing to address COVID-19 related complications may incur long term costs for the health care. These can be avoided by adopting a pragmatic perspective using individualised action plans where patients making a full recovery are not over investigated whilst ensuring those requiring additional support are adequately managed in both primary and secondary care.

REFERENCES

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