FINAL

Transcript of Ed Russell Presentation

Innovators in Healthcare

17 April online

Introduction

Hello everybody and thanks for joining us from wherever you are across the world. I'm Ed Russell, Chief Executive of WCS Care Group.

We're a not-for-profit charity running 13 care homes in Warwickshire. At WCS we try and challenge the status quo for things that we really believe in, because care can always be better, right?

We can always do better, and our jobs are never done. But sometimes transformation comes from some of the most unexpected places, which is where we came to lighting.

So I started out life as a care worker, but before that, I was a farmer. As a boy, I raised chickens for the Christmas market. I used to raise about 200 of them. And when they reached a certain weight, usually about three weeks before we wrung their necks, they began pecking and panicking and picking fights with one another. I asked my dad what to do and he handed me a red light bulb and said, here, stick this in. So that's what I did. And it just calmed down all the chickens instantly and they stopped being aggressive.

A few years later, not farming anymore and working indoors in care homes, I did find I missed daylight. And one of our trustees of the charity was doing some early seasonal affective disorder studies and she had a light box which I'd never heard of before. So she lent it to me to help me feel a bit better. And so I stuck it under the TV and watched TV with a light box on much to the annoyance of my wife at the time. And needless to say, she's my ex-wife now.

But I felt much, much better. For me, it was like stepping off ~ a plane when you get to a nice warm destination and the sun's shining and it would change what you eat, the way you feel, and your energy levels. So what if the lighting in our care homes wasn't just about visibility, what you could see, but about vitality as well and that human impact on us all?

A surprising superpower…

So at WCS Care, we're not scientists at all. We're not lighting engineers either. We're carers, but we do have a bit of a superpower.

And that's why we've actually done this. So we've been installing circadian lighting since 2017. So we've seen the difference it's made to people with our own eyes. That's what I want to really share with you today. It can be easier. I've done it to specify circadian lighting in a brand-new building. Even though that wasn't that easy, but...easier. But most care homes, and in fact, of our 13 care homes, ten are older buildings of different ages. So, how can you get lighting into an older building that doesn't cost too much? Because we may have all of this in theory, but if we can't get it over the line and get it in, then no one's going to do it. So we look very practically. So I'm going to start near the end with the Sycamores.

Challenge of retrofit

So the Sycamores, If you picture it, it's a 1960s building. I think you can see it there. Think beige walls, walls, creaky pipes, and the kind of lighting that screams hospital waiting room at you, rather than a home. Because obviously, it is the home of the people who are living there. And in November last year, and we chose November because it's the darkest part of the year, we retrofitted circadian lighting into the home with no rewiring, no major construction, just some clever design.

So electricians simply replace the existing light in the room that talks via Bluetooth to the other lights. And then a switch is a kinetic switch. So we cap off the existing switch, it generates its own power wirelessly and communicates via Bluetooth to the light to whether to switch it on or off.

And as we all know, electricians are really expensive, and they're getting more and more expensive all the time. So the cost of installation can kill a project. It doesn't matter what price the lights are sold for, with the overhead and profit and the time for engineers and electricians to install can kill that project. So that would be a barrier to any care home operator putting it in any of their old homes. You'd only be looking at brand new homes, and of course, they're all older homes out there.

Collaboration

So we partnered with Dr Shelley, who we know as the 'light lady, and she's been tireless in her support for us. I was counting up the emails the other day, and I lost count at about 700. She does so much behind the scenes. And John Bullock, who we've heard from briefly, lighting designer and editor of the Light Review, he's helped the industry step up and take notice, and he's tireless in that, in getting them to look and think differently. And thanks to John, because we're not lighting engineers, we're not scientists, we couldn't really bridge that gap. And Commercial Lighting, who engineered a bespoke system for us. So at risk, they've gone ahead and designed a bespoke system for our very particular care home needs. And also the

brilliant team at Oxford University, we just heard from Lucy on her PhD, to really help us define what good is like, but she's also helped to specify all the things I don't understand about the melanopic impact of light on people. And that's been absolutely great.

Defining circadian lighting

So, in a care home setting, what do we mean by circadian lighting?

Well, it's lighting, we think, that supports the body's natural rhythm. The internal body clock that we have in the care home setting changes when we wake up, when we eat, and when we sleep. All that is strongly influenced by light. In nature, that's the sun, and we've heard about that. The sun does that for us, and bright, cool daylight in the morning tells us it's time to be alert, as I understand it, and get up and get about and be active. A warm, dim light in the evening tells us it's time to wind down and have a rest, maybe switch on that TV.

But in care homes, especially with traditional lighting, we often have the wrong light in the care homes at the wrong time, disrupting people's rhythms. Because we're told by lighting engineers, no offence, John, but we're told that we need to specify very bright light that's inevitably got all that blue in it to stop residents who can't see very well from tripping over and falling. So we do specify bright light in the care homes, in the corridors and in their rooms. But when you're at home in the evenings watching your TV or whatever you do, you don't have the brightest lights on, do you? When you're relaxing. So you gravitate more towards a natural light, like candlelight or a sunset light.

Institutional lighting

But we don't do that in care homes. We put in this very bright light. So, being exposed to very bright light later in the evening can delay that onset of sleep. And if you look up the side effects of sleep deprivation and look at the side effects of living with dementia, there's a big crossover and overlap. Also if you look at the side effects of seasonal affective disorder and dementia, they do cross over too.

So in care homes, by the design of our building, could we be exacerbating people's conditions by the way we light it and the way we design them? By not having enough windows, and not having enough good lighting. So all these things really come together to improve the quality of life for people we're caring for.

And that's where at WCS we tirelessly try and look at better ways of doing things. So our mission is to improve the quality of life, not diminish it. So the lighting itself, as I said, feels clever and simple. It mimics for us, what we describe as a Mediterranean cycle. So between 9.30 AM and 5.30 PM, it peaks at 6,500 Kelvin, the colour temperature of a bright cloudy day. And then it transitions over a two-hour period, we call that sunset phase, to warm candlelight, which is a warm colour by 2,200 K. Overnight, it stays at that low level. And the brightness of the lighting also reduces overnight to about 20% of the brightness it can have in the day. Enough to see but not necessarily disturb your sleep or wake you up.

Controls and staff

Crucially, if you think in the care home industry of turnover of staff and training and people being aware, there are no control panels, and that's what we've chosen to do. Just standard-looking light switches. You flick the switch, the system knows what time it is, knows what colour temperature and brightness it should be on.

And so all those new staff we get can't override the system by accident. The old lighting that we had before we put in our circadian lighting gave us about 163 lux and that was at about 75 centimetres off the floor underneath the light in the horizontal plane. Now with the new lighting in the same position, we get about 600 lux just to give you an idea of when it's at its main brightness in the day.

Measuring impact - Dementia Care Mapping

And that really brings us to dementia care mapping. So how could we measure an impact on our residents? We have a lot of anecdotal evidence that Dementia Care Mapping is a structured observational tool that's come from Bradford University and it's widely used in dementia care to track well-being and interaction with people and their mood over a period of time.

Think of it as a combination of behavioural coding and mood tracking, done minute by minute over usually six hours. So each mapper, so that's the person who's doing the mapper, has to sort of hide and sit in the corner and not get noticed, observe the residents and record their behaviour using one of 24 different categories. And they'll assign a mood score every five minutes for somebody in those categories. There are various rules and the scores range from a -five for extreme ill-being - that's how they'd classify it, to a +five for extreme well-being. It's meticulous and it's robust in what they do. It gives us a detailed picture of what people are doing, how they're feeling, and how that changes over time.

Results

And at Sycamores we mapped a group of residents living with dementia both before we put the lighting in, so a week or two before we put the lighting in, and then afterwards over several maps after that. And the results were extraordinary.

Daytime sleepiness

Daytime sleepiness and alertness before the lighting, several residents spent a large part of the day asleep, as much as 98 % of their time. So in dementia care mapping, inappropriate sleep is where someone's nodded off for more than 20 minutes because that could be through a lack of stimulation or the way they're feeling. After installation, daytime sleeping dropped by an average of 58 % for those residents. So people who were once really, really withdrawn, became more alert, they were spontaneously interacting with others as well, joining in and staying awake for most of the day.

Interpersonal interaction

Socially, this one gives me goosebumps when you think about what happened here, is interpersonal interaction between residents and residents and staff, residents and their loved ones as well, increased by 470 % on average. Different for individuals, one resident went from just 5 % of their time interacting with people to over 65%. Another who had been mostly reactive before, so only would interact if you went up to them, started initiating eye contact, leaning forward, joining conversations of their own accord. That's not just more communication, it's better communication, richer, more purposeful, more human. One of our mappers, we have two mappers mapping, one of our mappers said, "It's like someone turned the volume back up on their personality."

Emotional well-being and engagement

So emotional well-being, looking at mood scores: mood scores improved dramatically with the new lighting. On average, that increased by 360%, while negative mood decreased by over 94%. But it wasn't a flash in the pan. These were sustained over many months. So if we could bring that to life a little bit, we got one resident Indigo had six falls in the previous year. But in the first five months after the lighting, no falls at all. She was often distressed and she would bang on doors with her fists like this in the evening. "Bang, bang, bang, bang, bang, bang, bang, bang, bang, bang" to get out. That has completely stopped. And her positive mood has gone from 21 % to 84%. She's now spending time with others, smiling, talking and making eye contact. And you can see her there in a picture instead of banging on the door.

And that's the impact. And the staff member told us, "I didn't recognise her. She's happy, calm and warm and it's like she's come back." And then there's a carer impact too. So you imagine having to care for somebody every two minutes banging on a door. The carer said they felt more relaxed and more connected to the people they support. And one said, "I don't go home exhausted, I go home proud." Another said, "The place feels calmer, residents are more themselves and so are we."

Sundowning

So sundowning syndrome is something I'm sure most of you have heard of. And this, for me is where we've made our biggest difference with the lighting that's come into the home. So people living with dementia, it's not everybody, but can have a condition called sundowning that goes alongside that, where agitation increases during the afternoon and evening.

And what this means in reality is somebody living with that syndrome gets very, very frustrated. They feel like they need to be somewhere else. And that could come out as aggression if they're stopped from doing what they want to do. Stop them, for example, from going outside or trying to get through doors, because of course, we have lots of doors and sometimes closed doors over stairwells and all sorts of things in care homes. So, as you imagine, being constantly stopped or cajoled by people can really be aggravating for the person living with dementia.

And that's even if the staff do that very lovingly. So the frustration builds and builds in somebody that they could understandably then become aggressive towards that carer. I've been a carer myself and that's how I started out and have experienced that personally. So we had residents trying to get out every afternoon, getting really really frustrated, trying to leave the building because that's what they needed to do. And you could set your clocks by it and the carers would call it the dreaded sundowner moment when it all happens in the care home.

So before the lighting during the winter we saw clear evidence of sundowning behaviour, negative mood scores increased late afternoon just as daylight was decreasing outside. After lighting was installed, the 6,500 k tones that we've talked about continued into the early evening before turning orange. So negative mood dropped in that period to zero, a hundred per cent reduction of negative mood in that same period where it all would kick off before.

Positive mood increased by over 70 percentage points. And not only negative mood going, remember the ill-being gone, but actually moving them into well-being. And going back to resident Indigo again, the change in her not banging on that door, getting aggressive and shouting, that impacted other residents too. Before the lighting, she'd lash out in frustration. And that would trigger residents nearby. Can you imagine? If you were sat near there and…?

Impact on staff

One carer said we used to dread it because it wasn't just resident Indigo, it set off a chain reaction across the care home lounge or across the whole floor. And that doesn't happen anymore. So we extended the sense of daylight during the winter and softened that transition into the evenings. But in the summertime, we bring the orange colours in much earlier than it would be in the northern hemisphere where we live, to the setting sun being very late at night. So that natural sunset feeling, that warm light brings that sense of calmness. And then wider impacts. We've had more with the staff who have told us they felt more relaxed during their evening shifts, more energised, and more motivated. The whole place felt a whole lot calmer. And we haven't formally studied staff turnover in relation to this or well-being yet.

But anecdotal feedback that we've got is that the job has just got a whole lot better for the care workers who work in the care home, care for people with dementia, where there's circadian lighting.

Previously in 2017 when we installed our first, we did some work with staff through Coventry University and they did a questionnaire study on staff and you can imagine the impact that the carers were reporting back and they said when a carer's got someone in front of them that they can't console or they can't calm down and that's repeating every few minutes, that impact and that draining of a fellow human being on a care worker is huge. And this happens day in and day out. And what's your alternative? Drugs. "Yeah, let's give them some drugs!" And of course, they all have side effects ~ as well. Make people wobbly, just

sitting down, they no longer engage with you at all. So the carers are much happier because their job has got a lot better.

Either way, the lighting was the catalyst for the change in the improved job for our care workers, and they can do the job they signed up to do.

Residents ‘voting with their feet’

So, Drover's House in 2017 was our first pilot. So half of the ground floor was fitted with lighting, scale in lighting. I remember visiting during the trial and seeing residents from the other side of the building. They were migrating to the side where the lighting was. That's how powerful it was. So they did that in the daytime because it felt like the sun was shining out on the other side of the building. And they did it at night because you get those warm temperature colours, as you can see in the picture. Management of the care homes said the household felt much calmer and more peaceful. Disagreements were much easier to de-escalate. Residents could identify their rooms more easily. Meal time for calmer and more pleasant. They had fewer falls and fewer residents at nutritional risk because they were eating better. And residents rarely, what we call, strolling without a purpose in those lit areas where people are pacing up and down, up and down. But they often still did that elsewhere in the care home, where we didn't have the lighting.

Sleep

Sleep improved. In fact, Coventry found it changed the sleep pattern and brought it forward by one hour. So people would go to bed an hour earlier but get up an hour earlier. Residents seemed generally happier. Relatives brought loved ones down from other floors in the care home to reduce their confusion during their visits.

Emotional impact and reduced administrative burden

So is that an emotional impact to the warm light as well as what else we think might be going on?

So there's a question for all you scientists. So dementia mapping dropped from 63 % to just three percent and well-being rose to 97%. It was massive stuff, saw people chatting, residents chatting, dancing and sociability, less aggression, less agitation, and less sundowning. And the carer said "It's calmer.

I used to fill out loads of incident forms after five or six o'clock." These are the things we make them do in care homes, you see? Instead of caring, you've got to fill out all those forms. Because of bickering arguments, "that's my chair, that's my seat..." But those arguments still happen elsewhere, but not in the area where we had the circadian lighting. So fast forward to a brand new building in 2019, and we put it in from scratch, which was great.

Reduced antipsychotic medication

Right here we've got no residents in this building for 72 people with anti-psychotic drugs, and over half of them are living with dementia. Some came in on them, and now they're not. So the lighting has had ripple effects ~ over other areas that we're still finding out today

Within six weeks one resident didn't require their anti-psychotic medication and their falls reduced. He knew the difference between day and night, which he didn't done before, and he got into a routine, waking in the morning and preparing for the day. His son was a paramedic and he said he couldn't believe the difference in his father and praised the home for supporting him with his dementia. In his words, he'd never seen anything like it.

On a cloudy day in the UK, again, don't shout at me if I got this wrong, but I think it's about 10 to 25,000 lux levels outside compared to the 600 that we're getting inside. But we were only getting 125 lux before with the old lighting.

Complementing, not replacing time outside

So I think that's got to have something to do with the change. But here's something that still shocks me is we understand the average time outside in the UK care homes only three minutes a month. Just think about that for a minute. If you got outdoors just once in a month. What would that do to you? By getting outside for as little as 15 minutes a day or 90 minutes a week, we know that you can start to offset seasonal affective disorder and SAD syndrome by getting that. Why only three minutes a month? Well, all the doors are locked. It's not safe to go out, is it? At all. When I go to other care homes often find doors are locked and it's like getting a jailer to get the keys to let people out. And many loving sons and daughters will pack their loved ones into the care home with no shoes, no outdoor coat or anything, because no one's expecting those care home residents to go outside. And that can't be the reason people go out, surely. And of course, there's the weather.

It's too cold, too wet, too windy, too hot. As a care worker, you get into trouble for getting someone sunburned, getting cold or tripping over or having a fall. So there are so many reasons not to do that. So a lot of care homes in England are more than two stories high because of land prices. It's even harder to get outside when you live upstairs. You've got to get into a lift. You've got to find a key to unlock the door and all those staffing levels and associated pressures. So there are so many barriers for people just getting outside to experience daylight to get that 90 minutes.

So we measure that through electronic care planning across WCS, and we aim for that 90 minutes a week. What we're hitting is about, even with all of our focus on this, we're hitting ~ about 69 minutes a week for about 60 % of our residents. So we've still got a long way to go. But we now have people wearing out shoes, which was unheard of before, and that impacts on their physical health:

Bowel medication, you're not constipated because you're moving about. So we say there's no such thing as bad weather, just bad clothing, changing that mindset that we have. But circadian lighting, as we've heard earlier, does fill the gap for people who can't get outside or can't spend that level of time outside. It's not prohibitively expensive. In a new building, it costs less than 1 % of the total bill. So it costs the same as selling one room for one year, and if you think that building's going to be there for 60 years providing care…

Return on investment

So when you look at it, it's a no-brainer. And my colleague Jo studies how many people choose the care home because of lighting, and people are getting it and actually making those choices when they're going to move in.

Call to action

So what's next? The UK obviously is phasing out old lighting. So everyone's upgrading. Over time, all these old buildings will be upgrading their lighting.

So, isn't there an opportunity here to get the word out about what's possible? But please come and see for yourself. If you want to get in touch, walk into Sycamores and watch the light and watch the people.

You don't need a PhD or a red chicken bulb just to believe in what's happening. But if you've got one, hang on to it. I should because it could come in useful one day!

Thank you, Dr. Shelley for your expertise, encouragement, and relentless energy. John, for being our industry bridge and champion to Lucy and the rest of the team at Oxford for pursuing this. Don Howard and Max from Commercial Lighting for having the faith and help to turn a vision into practical reality. All the staff and residents who have shared their stories opened the homes to us all and lived with this change. And of course, to Jo Cheshire, our brilliant director of marketing comms, who's the glue that's pulled all this together. And now she's telling the world why it matters. Thank you very much.

Age Of Light Innovations (23:41)

Ed, that was phenomenal. Just wonderful to hear those stories. So heartwarming. Thank you for the invitation for people to come because it really is remarkable the way that being in that environment just changes your perspective on what's possible. So thanks for leading the way.

One comment from John. The kind of numbers that we've been talking about, that Ed mentioned there sound scary to people Conventionally inside the lighting industry, you do not put 600 Lux into these kinds of environments because 600 Lux, for some reason, isn't very nice. Well, it doesn't have to be 'not very nice'. It can be exactly what's wanted. And

that's not from a technical point of view. That's from an emotional point of view. That's from a very human point of view. And so we can start really to push at those boundaries, the boundaries that have stopped us doing things because we think it can't be done.

And what we're demonstrating certainly, my experience with Sycamores, which has been fantastic and thanks so much to Ed and to Jo for supporting us all the way through this, is that there are ways forward and we're only still really at the start of this. And it's so exciting to be part of the journey. So thanks, guys.