VPP005 How big organisations implement new technologies with Bartek Ludwicki

Daniel: Bartek, it's great to have you here, it's great to speak to you one more time. We obviously know each other and I wanted to invite you as a friend, but I wanted to invite you to the podcast as well as a person who knows something about a very interesting topic. Your expertise is obviously very interesting, that's why I thought we could share it with the audience. Please, tell us a bit more about what's your job, what do you do on daily basis? I have already made a short introduction in the beginning, but just in a couple of words, tell us what you do.

Bartek: Okay, thank you for having me. It's an honor and pleasure. I always like to help as I can. So I'm working as medicines management technician, that's my job, but I am a pharmacy technician who is basically working in a hospital environment. So rather than working in a community pharmacy, as a shop, as you can see on the high street, it's actually hospital-based work. What I do? I do a lot. I've done a few different roles in every working condition, setting. I'll probably tell you what I'm doing on a daily basis at the moment. Working as a medicines management technician, as I mentioned before, means I am seeing patients, I am taking the drug history, so basically if you get admitted to hospital, I'd just like to know what medications you take. And you could be very unwell or elderly and it might not be able to find out from you and this is when we step in and we contact GP surgeries, we contact families, we use electronic records and basically compile some sort of a report which we can give to the doctors. And based on that, they can prescribe a medication. It is just the safest way of doing it. Obviously, the doctors are busy, so they can't do everything. And I think this is the basic description of what we do.

Daniel: So it is a bit of a detective role, I guess.

Bartek: It can be. Sometimes it's nice and easy, you know, you have a person who would say: "This is what I take, I brought it with me," which is also very helpful. And if they confirm, then, you know, Happy Days, but sometimes they could be

confused; they have a condition that would make it difficult for them, like dementia or they could be unconscious, even. So obviously, you can't really communicate with them and that's where you have to, kind of, do your investigation, as you said.

Daniel: Cool. One of the things I would like to talk about is the focus on technology, because the whole purpose of the podcast is actually to promote the technology which is developed in Poland, but obviously, you live abroad and it is crucial for me and it is crucial for businesses in Poland to understand what are the use cases of technology somewhere else, so we can borrow the best experiences, we can borrow what's been already out there. I would like to talk maybe about managing drug inventory. Ok, that's just a job you do. But maybe if you would change drugs into something else, do you see any patterns, do you see any methods that could get borrowed into a different environment? Is it something universal? Can you give me some examples of use cases maybe?

Bartek: Yes, of course. I mean, everything we do is very computerized and very "no more than technology." So if I'm doing the simplest thing, which is dispensing – well, not simple but it is what you do on a daily basis in any pharmacy. So you produce a label with the directions for the patient – how to take medication and then, in the old days, you would obviously go to a shelf, find the medicine, take it up, then apply the label, then dispense it. Nowadays it's different. All you do is use a computer, so you produce a label, the computer sends a signal to the robot which picks up the medication for you, producing no error, because the robot will always pick up the right stuff. You could be tired, you could have similar things next to each other, there could be millions and millions of reasons why you could pick the wrong item. The robot will never pick a wrong item. So that gets delivered to you and all you do is obviously double-check that this is definitely the right thing – which it would be. And then dispense it. So the use of robots, I think, is helpful. Even if you think about: we are dispensing about forty thousand items a week, I believe, which is a lot. So if you think about people walking and getting these things from the shelf compared to this being picked up by a robot and delivered to you, it's just incredible, so I think that's one of the big things. The other thing is – everything's computerized now, so we don't use drug charts anymore. The doctors don't prescribe it on paper, they prescribe it electronically. Even now, if I had an access to

the software where I sit, so I could be at home, and I could see a live prescription for a patient who is in hospital and I could see a pharmacist or another doctor who is on call, anyone can access that prescription and say: "Okay, we need to give this patient that" and this could be prescribed remotely. Then, the nurse holding a laptop, she could actually administer it to the patient and record electronically that this was given. So anything can be checked at any time. So I think technology in healthcare here is a big part, one of the biggest at the moment.

Daniel: That's quite interesting. So do you think use case of robots to deliver medications was that predicted on the number of errors in the past or is it just because it's cool to have a robot in the hospital?

Bartek: I think it's more about storing the medication. It's actually not that big. If you think about it, it's a lot of medicine in a very, very small place but because the robot is so accurate, it can put it on little shelves and basically squeeze in a lot more than probably we could going up the ladder etc. I think safety's a big part of it. It's definitely a big part, but it also reduces the workload, as I mentioned before, walking backwards and forward just to pick items – because the robot will do it for you. Obviously, there are still things that you can't store in a robot, like to control drugs or things that are kept in the fridge, you would still do that, but having robot minimizes the workload, so it's helping us as well.

Daniel: That's very, very interesting. I was not aware of this at all. So what else do you do, when it comes to the drug stock management? I'm really curious about the skills you have to have and if the skills are transferable to other places, other environments.

Bartek: I think, we use basic software that's actually keeping an eye on what the stock is, so obviously we regularly review the levels of different medication that we give just to make sure we don't run out of it, but also, you don't want to keep too much, because of the costs, expiry dates, etc. So it's basically connected to the dispensing software, so if something is dispensed, let's say, you dispense one item fifty times a day and it drops below the minimum level, that will automatically create an order of another fifty or sixty which is then electronically sent to the wholesaler who would then deliver it on the next transport which is usually, we usually have two

transports a day, so the medication keep coming. But we make sure that we don't keep too much and we have enough for the patients. I guess the big part is how expensive the item is. If it's something that we use very regularly and it's very cheap, we would probably keep a lot more of it. If it's a very, very expensive drug, then obviously, you keep an eye on it and you try to keep enough to keep the patients safe. But you know, obviously, not too much. So it's actually quite simple, I think. It's a simple process; it just has to be reviewed regularly, so if you notice that the usage of particular drug is going up, obviously, you need to adjust the minimum levels and how much you want to order. And I think that's the way it's done and it's quite easy.

Daniel: So it is almost fully automated then.

Bartek: It is. Obviously, there is still a human factor, someone has to keep an eye on things, but once you set up everything correctly and properly, I think it's kind of… It's just managing on its own.

Daniel: It's actually quite interesting. I didn't really think that this is that well automated. I mean, people always complain about how the health care system works, how bad it is, I guess, regardless of the country. But it seems like the one in the U.K., when it comes to managing their stock, it is almost where it should be.

Bartek: Yes.

Daniel: It's really impressive.

Bartek: It is. I think there is a lot going in the background. Even for me, as a patient, I would think: "Okay, doctor prescribes me something and pharmacy just gives it to me." But it's not as simple. Everything that gets prescribed has to be screened by the pharmacist so obviously you need to check if you're on any other drugs, you need to make sure it doesn't interact with any other drugs; doctors might not be aware of everything. They might not know that you're buying something over the counter, even vitamins – they can make a difference, even herbal medication – they could interact with something prescribed at the doctor's. Everything's screened by the pharmacist, then it gets dispensed in a dispensary, then it gets finally checked

by another person just to make sure that it's definitely correct and then it's released to you. So the processes can sometimes take a little bit, and the patient, kind of, think: "You know, I should have this quickly, because it's just one thing and I'm waiting for it half an hour." But It's just the way it is.

Daniel: So, if the whole thing is very well automated or almost fully automated, what's the way people interact with each other, what's the team like, who are you dealing with on a daily basis, and what are the rules and what do you need to do together to actually make things happen?

Bartek: So when I'm based on the work as a technician, I'm normally with a pharmacist. So I would kind of get all the information, put it all together, give it to the pharmacist and the pharmacist is doing more clinical screen, we call it clinical screen, so obviously they check if whatever patient is taking at home and whatever's been prescribed now is all appropriate – you know, there is no interaction; it's safe for the patient to take. But working on a ward, you work as a bigger team, because obviously there is the nursing staff, nursing assistants, doctors, ward clerks, physiotherapists, dieticians. It's one big team. And if you work on the same ward every day, you kind of get to know people and you help each other, you support one another and it makes your life easier. So I think having this skill to get on with people is crucial. If you can have good relations with the whole team, it makes your life a lot easier, and everyone's life a lot easier, I think.

Daniel: So if you would name them, what are the two or three most important skills to work in such fast-paced environment, where decisions are crucial? Sometimes decisions can be made by machine. But still, we are all people and as you have just said, the decisions sometimes have to be made by people as well. What are the skills?

Bartek: I think the most important is prioritization. So if you don't have time to do everything, which is normally the case, you go and you see the patients who need to be seen first, so it's very important that you have the experience to decide: "Okay, I have three patients. Who are they? What medications do they take?" And then, by looking at the medication, you'll say: "Okay, they are diabetic and I wonder if they had their insulin today; if they brought it with them, I should see them first."

So, I guess, prioritizing the work is very important. I think having the sense of urgency as well, so knowing when to speed up. Obviously, you can't be running around like a headless chicken all day long, but there are times that you have to and sometimes you just have to put in the third gear and just get on with it. It can be really busy, it's a busy environment, there's a lot happening. Even dispensary can be really busy, you come down to help and you have about thirty people trying to cope with the workload, which can be huge. So that's why you have the third skill, which is teamwork. On the wards you work with the nursing staff, doctors and everyone else. And if you're in the dispensary working with your colleagues, pharmacists, so you're trying to get the work done and help each other. So I think these three would be probably the most important, so: prioritizing; having the sense of urgency and, you know, when to go with speed, and teamwork – I think they're the most important.

Daniel: Interesting. Just one more thing on prioritizing your patients. So is this something you have to do or this process is as well advised by a machine or by any software?

Bartek: It could be me but very often I come to the ward in the morning and the first thing I walk in I'll see a doctor who would say: "Can you go and see the patient in bed four, because we need to find out, as soon as possible, what medications they're on." "Okay, fine." – So that's the first thing you're gonna do. Sometimes you see a pharmacist and say: "Oh, we've got two patients, we need to have the drug history as soon as possible, I'm doing this one, can you do the other one?" Or it could be yourself, so you come in and then you kind of decide, we get a list of orders as well, so if you look through the orders, and you see what kind of medications are ordered for patients and if you see insulin, if you see any anti-epileptic drugs or anything that the dose is very, very important and it's crucial that they have the medication on time, you would be like: "This is the patient I need to see first." and then you go and do it. So obviously, you need to have the knowledge and a bit of experience to do it. But on other occasions, you would very often be told by other members of team to go and see particular patient.

Daniel: But it's never been done using any advisory software or computer programs or anything.

Bartek: It is actually because nursing stuff, they order medication electronically as well, so even if at four o'clock in the morning they order something, we come in when we start our shift, we print a list of orders and by looking at that we can tell what kind of patients we are dealing with, what conditions they might have. So there is an element of software but I think maybe in this particular one it's mainly what we're dealing with.

Daniel: I see. This comes down to risk management, I guess. It seems like when it comes to commercial projects, no one wants to talk about risk management, because it's boring. But for you guys, I think it's like super crucial and it's super important. Can you just tell us how to do risk management properly?

Bartek: As I mentioned, we use electronic prescribing in medicine administration where I'm working at the moment, which is very helpful and very useful, but as you were talking about risk, it cannot be used in every environment. So if you're talking about emergency departments or if you're talking about intensive therapy units, sometimes, well, very often they have patients that might need the drug now which is *now and it's now*. And you can't really take time to look into the computer, find the computer, log in, prescribe it and get the nurse to give it. These are the places where things are still done on the paper, because it's quicker. This is the risk management. They know that they can't be accessing electronic notes, because again, they might not work, they might be accessed by somebody else, they might not have them available. Paper is there and that's what they use. I don't have any particular examples, but these are the departments that can't really use technology in that sense. All others; they have contingency plans, so every ward will have paper drug charts, even if the software is down, they can pick it up and use it. Every ward has some sort of paper notes, so even if you don't have access to everything, if something goes wrong, they will be able to check who the patient is and what's happening with the patient. There's a lot of work around that, the technology, which is great, but I don't think you can rely on it in this environment hundred percent, because if it fails, you always need a plan B.

Daniel: Exactly. I think that's a great summary for this. Because from the technology company perspective, you just focus on one thing and sometimes there is no plan B. Businesses, the crucial thing they need to do is to earn money, let's say, and it's a

bit strange when you compare money to people's lives in hospital environment. But to have a plan B, I guess, that's always good.

Bartek: We had in the pharmacy the times when the robot would fail and you would have to actually walk and get things manually. So I think this is the moment when people complain about this or that, but when they actually have to go and do the work themselves, that's when people really appreciate the technology we have.

Daniel: You've briefly mentioned, just a moment ago, about the fact that some of the orders, or maybe all of the orders, when the stock goes below certain levels, the system would get it re-ordered again. Is there any interaction with the suppliers? Who manages it and how do you deal with your suppliers?

Bartek: I think we have maybe two or three different suppliers. If we can't get something, we can obviously look for it and maybe go somewhere else. But I think the main two suppliers; we're in contact with them all the time. Because, although we have all the technology, sometimes it will order something and it would say: "This is out of stock." That's okay, it's out of stock, but we need to know why, for how long and when is it gonna be available and what to do. So this is the time when we actually have to pick up the phone and phone them and actually speak to someone. So it's great if everything is in stock, the suppliers have everything we need, but if they don't, we still have to interact with them by e-mail or telephone, so we are in touch.

Daniel: We've mentioned, a couple of times, usage of technology in your hospital, but, in general, NHS as an organization. How do you think they cope with new technology? How often do they introduce anything new and how well it's being managed or, maybe, implemented?

Bartek: I think it do it quite well. We use different software for dispensing, different software for electronic notes, different software for blood results. And these obviously have to be updated regularly. So I think this is usually communicated very well to staff, so we know well in advance that something will be happening, we know when it will be happening and how long it's gonna take. If the change is big, if the processes change, they do have IT trainers on site, who would organize sessions

with their departments and obviously tell us what's happening and teach us how to use the new program. When we were switching from paper to electronic prescribing – that was a big thing that was done in steps, so they wouldn't go and say: "Okay, from tomorrow the whole hospital is going electronic." They would do one or two wards at a time or one or two departments at a time and slowly everyone would switch. But, as I said, it was done gradually, so it wasn't done all in one go but, you know, once you get going, it was: "Okay, maybe we should improve this or that, and you improve it and then implement it and, you know, another one or two wards with the improvements and I think by the time you switch completely, you normally come through all the common issues.

Daniel: Okay, that's very interesting. So it was done in stages and you're saying that between each stage there was a feedback session and then something got improved maybe, and then with the next stage it was already fixed, if it was a bug or some feature request maybe?

Bartek: Yes, there were regular sessions, we could tell our views about the new software. We had plenty of support from the IT department or people responsible for the software and we would give them regular feedback, we would get regular training. So as I said, it was, the implementation, was a long process, we could've probably done it quicker, but I think because of the environment, because of the hospital, they've done it slowly to make it as safe as possible for the patients.

Daniel: I guess that's good, because obviously there is some risk involved in changing the habits and there's some significant risk when it comes to people's lives, I guess. It's not an organization where you can afford mistakes.

Bartek: Yes, that's true.

Daniel: Ok, so what was the most recent example of implementing of new technology? Did you say moving from paper to electronic prescribing or was there something else?

Bartek: No, I think that was the biggest one. We obviously had updated software for this and that. But this is the software we've been using for a while now.

Electronic prescribing was a big move, I know all hospitals in the UK are moving towards it, not everyone has switched to it yet, but I think the goal is to, at some point, everyone's gonna be using it. It saves time, it saves paper. Everyone has access to it, so you don't have access to a paper drug chart if you're at home, unless someone takes a picture of it or photocopies it. And then again, it's not a legal document, so you can't really do a lot with it. With electronic prescribing you can prescribe remotely from anywhere and you can access patient's record, see what's going on. Let's say, if you're a pharmacist working on call at home and you get a telephone call saying: "We need to give this to a patient as soon as possible." And before you supply it, the fastest you can actually go into the drug chart, check what medications the patient is on, if it is safe to give this particular drug. Then remotely get connected to the robot in the pharmacy stores and supply the medication. The robot's gonna send it to a place which can be accessed by doctors or nurses, and they pick it up from there. So it allows you to do the things remotely. And it's great. I think this is definitely the biggest thing, technology-wise, that happened.

Daniel: It's really interesting, because when you think about this, it seems like we're not far off to be able to just walk into a local shop like Co-op, or somewhere else, where there's gonna be a robot, which, based on what happens in the background between all the specialists, it will just give away drugs which are needed now, if someone requires them.

Bartek: Yeah, I think there are busy, even community pharmacists. I haven't personally heard about any of them having robots yet. I think the ones that dispense a lot of medications would definitely consider it, because it makes it a lot quicker and safer.

Daniel: I'm just thinking, you know, from a futurist point of view, it looks like we'll have vending machines with drugs, but they will get all the information from the specialists and you will just get what you need without meeting anyone.

Bartek: Yes, I guess that is possible as long as it's, you know, somehow controlled and safe. That could be the future.

Daniel: Maybe let's go back to you and your role. I always like to learn from other people and I always like to listen to what they have to say. It's interesting, because sometimes you get a simple sentence which will change your perspective dramatically. In the context of your work, in context of risky environment or, you know, very difficult environment: What did you learn recently and what could you share with us, so we can all learn from you?

Bartek: Okay, so what I've personally learned the most recently was about – I've changed my work environment for about a year. So basically, I was working in a General Hospital for about six or seven years. And I decided to try something else, something different. So, for a year I have worked in a mental health hospital, which was completely different, and overall it was still doing the same role, so I was still working as a medicines management technician; I was still visiting the wards, seeing patients. In mental health everything is completely different; from medications, to the way, to the processes you use every day. It was just really mind-blowing to me. I spent a year doing it and it's been a great experience, because it was something completely different. It was the same job, but in a different environment and it made it completely different. I really, really enjoyed it and loved it. So I would say: I think if I ever feel I would like to learn and do something new, even within my job, even within my role, I guess I could go, maybe now, work in a pharmacy manufacturing unit, where the chemotherapy is being prepared for the patient, or maybe I could take another speciality role, but I think it's really, really good to go and work in a different environment, doing similar role in different environments. It just opens up everything. I'm back in the General Hospital now and what I've learned in the last year, I'm applying from day one. So in the old days, mental health for me, I didn't really know a lot about it. And now I know how big the problem is and how many people suffer from mental health illness. So I think it was eye-opener.

Daniel: I see. So how do you manage to actually implement anything from that experience into your current role, if quite a lot of your tasks are put into boxes, are put into processes? Is it actually possible? I'm thinking from the perspective of, you know, team building, personal development, better time management, whatever. If

there are processes in place, is there any space to improve them, is there any space to do something better, quicker, as a human?

Bartek: Yes, definitely. I think the processes are really good, because they kind of give you a baseline of how things should be done, so if you come to a new place and you don't know how things are done there, you use processes. So we use SOP, which is standard operating procedure, so before you take any task, you should read about it and read how to do it. I think then, as long as you do what you should do, you can improve things yourself. So stay within the process and then, maybe, speak to your line manager and say: "You know, this is what I did and it saved time or it saved money or whatever. It actually improved the thing I'm doing," then I think, I guess, that should be reviewed and maybe implemented to the SOP. But there's also the fact how you gonna speak to the patient. Every patient is completely different, so you might have to adapt; you would be talking in a different way to a seventy-five-year-old lady, and different to a child, and in a different way to someone who's drunk and aggressive. So obviously, the processes are in place. But also, you kind of need to adjust and you need to use your experience and your personal skills to actually follow them, so you can't really strictly follow the process: go introduce yourself and ask this and that question. Oh, I have a good example here and it's actually technology-related. So we can access patients' summary care records. Summary care record is a record created by the GP surgery which contains a list of the regular medication or the medications a patient had in the last three months, like antibiotics, etc. Now, technically we can't access this without patient's consent. Well, we can't access this without patient's consent, full stop. But, my opinion is, if you go and ask for a consent, If I would go to you I would say: "Are you happy for me to access your GP records, or summary care records, because I need to know this information?" and you would probably say yes or no. But if I go and speak to an elderly patient, I'll probably go and I wouldn't use words like "summary care records," which may be scary, I'd probably say: "Is it okay if I print a list of your medicines so we can go through it, you know, and have a look if it's all correct and this is how you take your medicines." So there are processes, but I think you still have to adapt to the situation.

Daniel: So it's probably more related to, as you just said, interacting with other humans, so the process is there, but because your work is very human-oriented, then the results, even though they're controlled by a process, the results are fully on you, fully on the person who's dealing with the patient.

Bartek: Yeah. I've worked in manufacturing before and I did follow a strict procedure and that's simple: if something has to be, you know, no more than five centimeters – it can't be more than five centimeters and, you know, full stop. There's no interpretation in healthcare, I think, because of the nature of it. I think it's all slightly different.

Daniel: Okay I've run out of questions. It's been great talking to you, Bartek. It's been great having you in the podcast. I hope that I will be able to find other people who are like-minded and who would like to share their experience with us. I'm just thinking, what would be the best summary for our discussion, how we could all benefit from learning from a big organization like NHS. What would be the top one thing that maybe a small organization should do, something that would be easily transferable, something that we can just use to make things better?

Bartek: I think, use the technology, definitely. It helps, it speeds up processes regardless if it's a small or large business. Maybe it's a question of affordability. Big organizations like NHS, they will invest the money and they know it's for the safety and best of patients. So I think it's: do it, but have a contingency plan and always think about what to do if the technology fails. Because in my environment it's crucial. You know, you have to help the patient if the technology is there or it isn't. You need the plan B.

Daniel: All right, brilliant. Thank you Bartek and let's keep in touch and that's it, I guess.

Bartek: Thank you for having me.