1  Introduction

2020 is really not the year to criticize the German healthcare system as a whole. I’m still glad about how great we handled the COVID-19 pandemic and, to be honest, a little proud to be part of such a great healthcare system.

After I repeatedly criticized how little digital our healthcare system is in comparison to the rest of the world (Thiel 2018), it is time to acknowledge how above average our healthcare system still is when it comes to actually treating patients. Nevertheless, there is still much room for improvement: “Up to EUR 34 billion could have been saved in 2018 if the German healthcare system had already gone digital. This corresponds to around 12 percent of the actual total expenditure of an estimated EUR 290 billion this year. This is a new record, and the momentum is unbroken: German healthcare expenditure is growing at a nominal annual rate of 4.5 percent due to the aging population and more expensive treatment methods” (Hehner 2018).

Thinking about a better way should not be strictly correlated with thinking badly about the current process. Rather, we should appreciate the good things in our healthcare system and not be blind to the potential for improvement in so many areas.

I do not pretend to be able to say what is the right way and what is the wrong way. I am more interested in pointing out challenges and suggesting possible solutions—whether they work, well, that’s something we can discuss, but in the end we have to try them out.

The following will not be a quantitative study of the digitization potential in the pharmacy sector. I leave that to external strategy consultants. As part of my pharmaceutical education I worked in a pharmacy myself. I would like to describe
the most typical patient enquiries in everyday pharmacy life that I have noticed. Since I had already worked with digital business models before, I couldn’t help but think about digital solutions. Therefore, I will also start to sketch digital solution concepts as a basis for discussion, but they all still need to be tested. You can now take this as either an interesting impulse for thought or as an invitation to test it together. That is fully up to you.

Disclaimer  By pharmacist I mean all people who work in pharmacies. Just to reduce the complexity of reading, I will not distinguish between the different roles in a pharmacy. Furthermore, it shall be clear that in addition to the three cases described in the following, a lot of other areas of responsibility are covered by pharmacies. In order not to go beyond the scope of this chapter, I will limit myself to the most important and interesting cases in my opinion.

2 Patient No. 1: Self-Medication Request

Of course, the relative frequency of the different patient cases depends strongly on the type and location of the pharmacy they are looking at, so it should be mentioned at this point that I worked in a pharmacy in central Berlin with very long opening hours.

Patient no. 1 simply asks for quick relief of his trivial complaints (e.g. cough, runny nose, or a simple vaginal infection). They do not ask for a specific product. They have a rather typical problem and want to know which of the hundred available products is best suited for them.

Since this type of patient typically has no concomitant diseases, the answer to the question of which drug is the right one for him is very general. If they do take medication regularly, it is usually only the classic headache tablet. In addition, the medications used for such complaints are (not always!), but for the most part very well tolerated and have few interactions. This is often due to the fact that the drugs are only used locally. At least the interaction is usually so low that it only plays a role in pharmacology lectures, but not in practice. In addition, many cold medications are plant-based and extremely well tolerated.

It remains to be examined whether the trivial symptoms in their combination, appearance, or duration are perhaps signs of a more serious disease. The questions that need to be answered are defined in standardized guidelines and are comparatively simple to apply (Bundesapothekerkammer 2019).

The answer as to which drug is the right one is often the same and theoretically easy to answer, whereas the problem is often that the data available on some over-the-counter drugs is comparatively thin. To give an example: While the importance of expectorants in cough therapy in pharmacy practice can hardly be denied, the data available on them is sometimes questioned. The drug telegram says the following about this drug group: “There is a lack of meaningful clinical evidence that the course of lung diseases can be favourably influenced by expectorants. (...) The ther-
apeutic benefit of expectorants is therefore still doubtful” (Arzneimitteldatenbank, atd arzeni-telegramm 2020).

In my observation, it happens way too often that the pharmacist’s recommendation follows personal preferences and habits instead of the latest therapy guideline.

3 Patient No. 2: Simple Request of Prescription Medicines

Patient no. 2 comes with a prescription and wants the medication the doctor has prescribed. He tends to react annoyed when he is overwhelmed with too much information, because he is usually on his way to the next appointment or even more understandable, he is feeling bad and wants to get back to bed as soon as possible.

Apart from the discount contracts, which we will talk about later on, the cases we are going to deal with here are—from a pharmaceutical point of view—not the most complex: we are talking about patients who do not take any other medication apart from the medication the doctor has just prescribed for them, no comorbidity and no chronic diseases. Typically, these are antibiotics or similar therapies that are only used for a limited time.

If the basic conditions are trivial (no comorbidity, etc.), the patient cases who have been prescribed the same medication usually differ only slightly from one another.

The questions about the drugs and their use or the important aspects the patient needs to know about are therefore almost exclusively dependent on the drug and the disease for which it is prescribed (e.g. some antibiotics are taken at different frequencies depending on the type of infection), so that there are only a handful of cases per drug that differ, but are almost identical from patient to patient. The really exotic requests are rather rare.

In addition to the core pharmaceutical issues, the discount contracts already mentioned must also be taken into consideration: Now comes a little bit of detailed knowledge from everyday life in a pharmacy: In the majority of cases, the corresponding discount contracts must be checked for this. In theory, this happens automatically. In practice, there are often little pitfalls and problems for the patients.

For all those who do not know the discount contracts: These are concluded between health insurance companies and pharmaceutical manufacturers and lead to the pharmacy being obliged, depending on the health insurance company to which the patient belongs, to give the patient the medication that is most economical for his health insurance company. These can change from time to time and then a patient gets the yellow pack instead of the blue one. Theoretically, of course, these are the same drugs, but from different manufacturers.

It is far beyond my competence to evaluate discount contracts, but let us keep in mind that, even if it is sometimes difficult in the pharmacy everyday life, it is one of the few measures with which we have managed to reduce our health costs dramatically (Rohrer 2020).

Which seems very important to me in the light of demographic change and the like.
On the one hand, the challenge lies in stock-keeping, which means that instead of having one drug in the appropriate dosages and pack sizes, the whole range must now be available from a large number of manufacturers so that all patients can be served as quickly as possible and does in the best case not has to come to the pharmacy a second time to pick up his or her medication. But experience shows that the colleagues managing the inventory are doing a great job. Of course, the bigger the pharmacy, the better it works.

On the other hand, the pharmacist’s challenge is to empathetically deal with the related fears of the patient. In principle, of course, drugs would not simply be exchanged if they had different effects. But the devil is in the details: some tablets are harder to swallow than others; the patient should only take half a tablet and the new tablets are no longer divisible and of course—especially when we think of psychotropic drugs—the patient is sometimes simply afraid if the tablet suddenly looks different, no matter how it is supposed to work in theory.

4 Patient No. 3: Complex Request of Prescription Medicines

I met patient no. 3 relatively rarely in my pharmacy, which is probably mainly due to the location and type of pharmacy I worked in. The patient for whom new solutions are urgently needed: a multitude of medications, so that he is overstrained by the correct intake, the prescribing doctor does not know about all the medications that are also taken, so it comes that diseases are treated doubly, interactions occur that could be avoided and, which is not to be underestimated, the patient, who may also have problems swallowing, must take unnecessary many medications. Side effects occur which could be avoided and so on. In fact: “23% of all adult German citizens (15 million) take three or more drugs on a permanent basis” (ABDA—Bundesvereinigung Deutscher Apothekerverbände 2019).

The time and resources that we can save on simple cases like Patient No. 1 (Self-Medication Request) and Patient No. 2 (Simple Request of Prescription Medicines), we should urgently invest in patients like case number 3. I am talking about the big field of medication management, which I think urgently needs to be established.

I am uncomfortable to say that pharmaceutical education in general is not up to the task of sophisticated drug management, although I am convinced of this, but I am not aware of any data on this. Therefore, I approach it from the other side: Imagine a team of about 20 pharmacists specializing, for example, in neurological diseases and concentrating only on these. Every day they do nothing else but work on medications in these therapeutic areas (which of course have their overlap with other therapies), then it is quite plausible (to put it cautiously) that consulting and medication management can take place on a much more sophisticated level than if a pharmacist simultaneously sells cough medicine, deals with antibiotics and cardiological medications, and also has to stay up-to-date on the latest developments in the field of neurological diseases, isn’t it?
5 Let Us Try to Be Naive

It is our statutory responsibility to provide the population with the medication they need and we are happy to do our best to find a way to get any medication a patient wants (of course, only if it is allowed) and that as soon as possible (§§ 1 und 2 Bundes-Apothekerordnung, Bundesapothekerkammer 2016).

In addition to the increasing number of available drugs, we can already observe how the patient is becoming more and more a “responsible health customer.” Thus, pharmacists no longer advise patients only on the few options they most like to recommend to their patients, or which they consider to be the best, but also on products that patients have read about online (Carl 2018; Kinch 2014).

Sometimes, and some of my colleagues will certainly judge me for this, working in a pharmacy has something of a specialized logistics provider: We arrange even the most exotic medicines for the patients as quickly as possible. You will never hear in a good pharmacy: “That’s not in our inventory.” There is no such thing as a limited inventory in the everyday life of a pharmacy. The inventory is almost everything that has anything to do with health.

The second major part of our statutory responsibility is to advise patients on the medicines we supply them with (§§ 1 und 2 Bundes-Apothekerordnung, Bundesapothekerkammer 2016).

But, if you want to give profound advice on a nearly unlimited range of products, you need nearly unlimited knowledge. It is self-explanatory how well this can work in practice, isn’t it?

I have already seen pharmacists giving their patients perfect advice on cosmetics, talking to them for half an hour to find the perfect sun protection for them and their children before the vacations—great work in preventing skin cancer.

I have also seen how pharmacists have analyzed the medication of comorbid chronic patients in a depth that left me speechless. Not only do they find problems, but they also suggest solutions to the doctor, and this results in patients actually taking less medication with better outcomes and fewer side effects—fantastic.

Last but not least, I have also seen how pharmacists have given a perfect answer to the patients’ questions about their colds. Not only did they recommend the products that best fit the patients’ needs, but they also responded sensitively and caringly, so you could see how patients were already feeling better when they left the pharmacy.

But here is the problem—it was never the same person. In our age of knowledge expansion, we need to specialize more and more to be able to offer the best possible service. “The knowledge about how the human body works, its strengths and weaknesses doubles approximately every 4 years. This poses unexpected challenges not only to medical students, but also to experienced physicians and finally to the entire healthcare industry” (Carl 2018).

How can a human being be able to handle all this at the same time?
Let me be clear: My colleagues are doing a great job! It’s not a question of whether we do it well or badly today, it’s a question of whether we could do it better tomorrow by using the full potential of digitalisation.

As I already mentioned, I am not claiming that my ideas are right or that they work. It is merely an invitation to try out new concepts with me in an industry that has been talking about the need to renew itself for longer than I have been in the sector, which admittedly is not too difficult to achieve.

If you refuse to participate, just take a seat and observe. Watch us fail with ridiculously foolish ideas. Watch us closely so that you can learn from our mistakes, and who knows, maybe through all this failure we will learn enough to come up with ideas that actually make sense and even have the power to change the industry to provide even better care than we can already provide to all our patients today. After all, that’s what all innovation and start-ups are all about, right? Having the courage to fail often enough until you have created something beautiful.

We need a discussion between people who know the problems and realities of everyday life, why certain ideas cannot work and people who are naive enough (like me) to believe that new ways are actually possible.

And only if we combine this discussion with the willingness to be stupid enough to try these ideas—taking into account all patients concerned and their safety, of course—only then will we have a real chance to find answers to the question of how we can make our great healthcare system even better.

6 Just Brainstorming Here

The discussion about online pharmacies often ends with a discussion about online stores that sell packages. I am not talking about replacing structures with complex tasks and responsibilities with a simple online store. On the contrary: I am talking about adding digital areas to complex structures that allow for even more sophistication, instead of reducing the pharmacy to simply selling packages.

After we have divided the majority of patients of a public pharmacy into the three categories described above, it is difficult not to think about using technological innovation to slim down processes for handling cases 1 and 2 in order to have more resources available for case number 3.

How young pharmacists would spend the extra money: Sometimes innovation comes not from outside and new competitors but from inside—from the own new generation: Pharmaceutical services such as medication management for the care of polymedication-patients are strongly advocated by the BPhD (Bundesverband der Pharmaziestudierenden in Deutschland e. V. 2019).

Apart from the discussion who will pay whom how much for that kind of services, I would like to see the discussion start about how it could be done on a highly efficient way.

As it is common for providers of telemedicine, it is time to introduce automatic pre-filtering mechanisms in the pharmaceutical world as well and to forward only specific problem cases to appropriate experts, who can then contact the patient
and his doctor through various channels to solve their complex problems. Human capacity is limited so there is an urgent need for greater specialization: For me, the question is whether a pharmacist who is in charge of medication management has to be present in a pharmacy as we know it? Does he at the same time have to know about discount contracts and be able to sell cough medicine empathically? Or would it perhaps be more beneficial for the patient if this pharmacist were to sit at a computer in an office and do nothing but optimize medications all day long? Drug management is only one area that could be expanded if resources were freed from routine tasks. New services could be introduced, but most of them require a certain reach to function efficiently, which typically can only be achieved digitally. Back to the automation of simple cases, which I will focus on below: For patient no. 1, most inquiries are, as described above, simple and often the same—ask any pharmacist you know how many patient cases are the same on any given day. We should seriously consider ways to automate this process. Automating does not mean skipping out consultation and thus reducing the pharmacy to an online store. As I have already explained, the goal is to improve services: It is almost too obvious why, for example, medical chatbots can save a lot of resources that we can then put into better care for patients whose cases are more difficult (Hehner 2018).

But quite apart from that, why do I think that for simple cases, digital solutions can increase the quality of consultation? The following are my thoughts, the validity of which still needs to be tested.

6.1 Find the Right Medication/Product

Digital, patient-centered consultation tools can raise the quality of consultation to a constant level. Instead of sometimes being based on the pharmacist’s personal preferences, the products are then recommended purely according to guidelines and the currently available data on the active ingredients.

My point is not that pharmacists give bad advice, but that pharmacists are people and people sometimes have a bad day, algorithms do not.

In the test, only 3 of 21 public pharmacies tested ended with “good.” Many mistakes could have been easily avoided: For example, pharmacy software warns of interactions between the drugs entered. Online pharmacies seem to use these programs more often than locale pharmacies (Stiftung Warentest 2014).

This is something I can confirm from personal experience. At this point you can probably already guess that I am actually a fan of digital tools. Nevertheless, it is difficult to integrate them into the personal conversation and furthermore, it feels as if the need for software support is questioning the competence and thus damaging the patient’s trust in the consultation.

Firstly, it shows that despite the generally very good health care, we still see significant potential for improvement. Secondly, it suggests that it will be very difficult to integrate the potential of digital technologies into a personal consultation. I’m not saying that it is impossible, nor am I saying that the quality of consultation can be improved by digital, patient-oriented services. Both have yet to be tested.
Concerning patient no. 2, we talked about discount contracts. Since the selection of the right product is, apart from technical implementation problems, already automated, I will focus in that chapter on the part of answering the patient’s questions about discount contracts (see Sect. 6.3 Consultation).

6.2 Safety Issues

Even if an above-average number of self-medication inquiries can be solved trivially, by no means all of them are. Therefore, especially when these are processed automatically, it is important to filter out the more serious cases and to forward them to a personal consultation, e.g. via tele-pharmaceutical solutions. This could be done, for example, by means of integrated security queries in the automated consultation. The security questions required for this are clearly defined in the relevant guidelines and would have to be queried during every consultation: both online and offline. Unfortunately, some of these are sometimes forgotten in the heat of a personal conversation (Stiftung Warentest 2014).

I can understand this very well based on my personal experience, too. And here, too, I am convinced that it can be implemented digitally more consistently—and that, too, still needs to be tested.

The problem in a personal conversation in a local pharmacy is often that patients number 1 and 2 react quickly in an annoyed manner because they are naturally in a hurry in everyday life and on their way to the next errand. The fact that health comes first, and that people like to take a lot of time for it is more true in theory than in practice. In my opinion it could help to give the patient the opportunity to deal with the safety questions when he has the time and not when he is near the pharmacy: e.g. when he lies relaxed on his sofa on Saturday evening and not Wednesday afternoon when he has to pick up the child from soccer training next.

6.3 Consultation

With tips for the correct intake it behaves in my eyes similarly: For the patient these do not play the largest role, if he stands in the pharmacy. The main question here is whether he can still catch the next bus or if he has to wait 15 min for the next one.

In my opinion, the questions about the correct intake would mainly be asked when the patients are at home and are about to take the first tablet. The questions about side effects become particularly relevant when considering where the itching comes from the next morning. At the time the medication is administered, the urge to be back home to rest is often stronger. This is understandable if you imagine that the patient with a severe cold has only left home to buy a remedy to feel better and wants to get back on his couch—because he is sick.

Also, the consultation with information about the food dependence of the intake, application duration, and possible side effects can be displayed automatically. As
described in Sect. 3, the necessary information about the same medication differs only marginally in different patients.

Furthermore, I am convinced that if the patients can read the most important information always available, e.g. in their pharmacy app, it is even more effective than if it is said once in a one-time personal consultation. Since the detailed situation of the patients in these cases makes only a small therapeutic difference, the instructions can be presented in a few standard cases. I see the whole process within the realm of possibility. As always in this chapter, all claims and suggestions are to be verified.

Now we will talk about the discount contracts: In practice, almost every time medication is dispensed, it must be explained again why it is a different tablet this time. In my experience, confusion on the patient side is mainly caused by the fact that the contracts in different pharmacies and by different employees in a pharmacy are adhered to with varying degrees of accuracy and—even worse—are explained in different ways.

In my opinion, digital, standardized information on the subject, for example, in the form of explanatory videos, can help here and provide the patient with more clarity in the long term than having to listen to a new/different explanation every time a patient goes to the pharmacy to get a drug. As always, there must of course be the possibility of receiving individual explanations if there are further questions or individual factors to be considered in the selection. As already mentioned, the devil is in the detail here.

## 7 Conclusion

The first part of this chapter categorizes the majority of patients in a local pharmacy on the basis of real-life experience. We then presented various problems within each of the categories and described the situation in pharmacy’s everyday work. In the second part we presented innovative concepts to provide medicine to the patients in a beneficial way. Finally, we pointed out ideas on why digital services in some aspects are superior to personal consultations, and as a result I hope that it became clear where untapped potential for technology exists and maybe this chapter even motivated you to invest resources and test new patient-oriented services.

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