

# **BIZCHANGERS**

## **RiskBlog: Business Risks from Pandemics and Epidemics**

### **(or "How to Prepare for the consequences of Microbial Sex")**

#### **Have you ever considered what would happen to your business if a deadly infectious disease swept across the nation?**

What would you do if tomorrow a quarter of your workforce doesn't turn up for work, and those who do are fearful that they or their loved ones could soon become infected and possibly die.

This scenario may appear far fetched or taken straight from the script of a low budget disaster movie. It is, however, something that governments and health agencies take very seriously and they are preparing detailed response plans ready to be implemented at short notice. The following is taken from an Autumn 2007 status report on Pandemic Influenza Preparedness produced by the European Centre for Disease Control (ECDC):

"When the next pandemic comes it is unlikely to be a trivial matter. All of the three pandemics of the 20th Century killed millions worldwide in their early waves. A recent published estimate of the impact of a re-run of the 1918–19 pandemic predicted that it would result in over a million additional deaths in the EU/EEA alone. For every death there will be many more people with mild, moderate or very severe illness

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that will put immense, perhaps overwhelming strain on health and care services. These services may struggle to provide care for those affected by the pandemic. Without preparation they will also struggle to continue to deliver their core services (obstetric care, trauma care, emergency surgery, terminal care, etc). These stresses will be compounded by levels of acute influenza in the health sector workforce affecting health sector staff as much as anyone else."

The report goes on to explain: "If preparations are not made, equally disruptive on society in general will be the effects of up to 20% of the workforce being off sick or having to care for sick relatives. In small units the proportion (who are) off sick will be even higher at times. The economic and social disruption could be massive. Key services such as food, fuel and power relying on movement of supplies will be especially at risk. For example, efficient 'just in time' stock-management systems (which mean that for many supplies items arrive just before they are anticipated to run out) are now very common in Europe. However, these are considered especially vulnerable as the supply lines are liable to failure if numbers of key workers in production or delivery go off sick and no preparations have been made for this eventuality. In this sense the ever greater interdependence of Europe with goods and people moving rapidly around for day-to-day living makes it more vulnerable to a moderate or severe pandemic."

Do you have a pandemic response plan for your business? If you do is it up to date?

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## **What are the risks that we face from a new virulent strain of virus or bacteria? How do such new strains come about?**

When you understand the processes involved it will be easier to appreciate why the authorities are not making preparations for 'if' but rather 'when' the next pandemic will arrive. Like them preparations for a serious epidemic situation should be a key part of your risk management process.

### **Microbial Sex and the creation of New Infectious Diseases**

This headline grabbing title simply puts a rather common event in the microbial world into lay language. Bugs are extremely adept in exchanging and fiddling about with their (and our) genes.

Consider a scenario in which a Swedish boy marries a Japanese girl: nobody would be surprised if their daughter has typically Japanese eyes and typically Swedish blond hair. These are hybrid characteristics which would not normally be found naturally in purely Japanese or Swedish children.

Now let's move over to the microbial world. A human influenza virus meets up with a bird influenza virus inside a pig cell. They take over the pig cell's equipment for producing genetic material and force it to produce copies of themselves. This is how viruses reproduce. If two different strains of virus infect a single cell it is quite possible for them to produce hybrid offspring which take on some characteristics of both 'parent' viruses.

What if the human virus causes fairly mild infections in people but is highly infectious. This means lots of people catch it but it only causes a

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mild headache and some muscle pains. What if the bird virus is highly infectious in birds and is therefore easily transmitted around the globe. The bird flu virus also has a very high fatality rate in humans but fortunately it is not very good at human to human transmission. Therefore it is unlikely to cause an epidemic in humans.

However if the human and bird flu viruses produce hybrid offspring it is possible that one of these hybrids will have both the ability to be easily transmitted between people (from the human virus) and also has a very high human fatality rate (from the bird virus). In such a scenario a deadly new pathogen might be created with the potential to cause a very serious epidemic. What's more it might just be possible that the hybrid does not cause serious problems in the pigs where it was first created. If this is the case pigs and birds might become carriers leading to rapid, wide dissemination of the virus before its full deadly potential for humans is even recognised.

## **What about Bacteria?**

Today, when we talk about pandemics we tend to think of viruses. Diseases caused by bacteria, since the discovery of antibiotics, have generally been easier to control. However, more and more antibiotic resistant strains of bacteria are appearing. How are they created?

Once again it is highly likely that microbial sex plays a key role. Viruses do not have their own cells so they have to take over the cells of other organisms to do their mischief. In contrast bacteria have their own cells and are able to transmit genetic material between one another by process called bacterial conjugation. Genetic material is transferred through a thin conjugal tube connecting the two organisms.

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Many years ago, before I moved into business, I studied how bacterial conjugation could be used to transfer genes for antibiotic resistance between bacteria in the Streptococcus family. These genes were referred to as plasmids or 'jumping genes'. They conferred resistance to a group of powerful broad-spectrum antibiotics on an otherwise antibiotic sensitive bacterium which received the plasmid during 'bacterial sex'.

Hospitals use large amounts of antibiotics. When an antibiotic resistant strain appears its development is actually encouraged in hospitals because their antibiotics kill off the other bugs which compete with it for nutrients and space. Most of the bacteria in our bodies do not do us any harm and may actually be beneficial: they make it harder for pathogens to get a foothold – that is until they get zapped by broad-spectrum antibiotics. Not surprisingly multiple antibiotic resistant strains of bacteria tend to be discovered first in hospitals.

## **Learning from history**

We have already discussed influenza but this is by no means the only candidate for the next deadly epidemic. In fact a very recent serious epidemic, SARS (Severe Acute Respiratory Syndrome) was caused by a different microbe. I was the president of an Asian chemical company employing over 700 workers to construct a new factory in Taiwan when SARS broke out in 2002. During the epidemic nearly 1000 died in 37 countries.

Like Influenza SARS was caused by a virus: a Corona Virus. It is suspected that the SARS virus jumped to Humans from Bats (possibly via other wild animals sold as food in local Chinese markets). Once

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again it looks as if the microbes involved were extremely adept in exchanging genes and creating hybrids which were lethal to humans.

What happens when you get SARS? According to the European Centre for Disease Prevention and Control "The incubation period ranges between 3 and 10 days. A high fever then appears accompanied by general symptoms and, often, by diarrhoea. Some days later, pneumonia becomes manifest, which in some cases progresses to produce fatal respiratory failure (overall death rate has been about 10%, but exceeded 50% for patients aged over 60 years)".

I vividly remember the scenes in the Asian factory during the outbreak. All employees had to wear face masks and the body temperature of every employee and visitor was measured upon entering the premises and several times during the day. Many offices and public buildings installed infrared scanners to measure the body temperature of people passing through the reception areas. Throughout the company hygiene facilities were enhanced and we were fortunate enough to secure emergency supplies of antiviral drugs (however since the supply was inadequate for all 700 employees its use would have presented us with an ethical dilemma: Who to save?).

During the crisis one of my engineers was forced by the authorities to go into quarantine for two weeks because he had taken a ride on a bus also used by someone suspected of having contracted SARS.

Interestingly the one place many people avoided during the crisis was the hospital: there was a belief among the general public that most of the person to person transmission of the disease occurred in the hospitals.

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Fortunately this epidemic was brought under control. However the virus is believed to be still at large in the animal population and may return to the human population at some point in the future.

For more information on this and other potential epidemics please refer to the following link:

<http://ecdc.europa.eu/en/healthtopics/sars/Pages/index.aspx>

The bubonic plague or 'Black Death' was an example of a pandemic caused by bacteria. This disease wiped out major parts of the global population during the 14th Century. An estimated 75 million people or something close to half of the human population at that time were killed. The disease spread so quickly that it was not possible to keep up with the need to bury the dead with mass graves being created throughout towns and cities.

## **How can you prepare your business for this serious risk?**

If a serious epidemic arises it is quite possible that many of the things you take for granted in your normal business activities will be severely impacted. We cannot predict when or where it will arise, and we do not know how the disease will be transmitted, what symptoms it will have, or its fatality rate. In fact in the initial stages of an epidemic with a new pathogen, like SARS, it is possible that even the authorities will not have the answers to some of these questions.

Therefore some of your planning will need to be generic in nature but you must ensure you have the ability to quickly adapt as more information becomes available. You should take a look at your business, its processes, people and equipment and try to imagine how they might be affected by a pandemic. Then you need to develop plans

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to mitigate the most damaging impacts on the business and its stakeholders.

A good place to start is by creating a value TRAI for the business. This is a simple tool which allows you to summarize the key elements of the business which contribute to creating or protecting value. It provides a way of scoping a business entity to help us concentrate on what is important and is a powerful tool in any risk identification process.

You can easily get information about how to produce a value TRAI from either [bizchangers.com](http://bizchangers.com) or [risktuition.com](http://risktuition.com) (the information is free of charge).

The value TRAI breaks the business down into the following key categories:

- **Targets** (that it is expected to achieve),
- **Resources** (that it needs to achieve the targets),
- **Activities** (performed in order turn resources into targets) and
- **Interactions** with important stakeholders

Up-to 10-15 items are listed under each of these categories.

## **Business Targets in a Pandemic Situation**

A value TRAI for an organization would typically list up-to 10 important targets or strategic deliverables. For example these might include profitability, sales or business growth targets.

If you find yourself facing a deadly epidemic these 'business-as-usual' targets must be reviewed. You will need to set up a Pandemic Management Team (PMT) comprised of relevant experts at senior levels in the organization. The exact composition of the PMT will

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depend on the nature of the business but it should include people with experience in:

- Health issues (e.g. the company physician)
- Communications
- Operations/Manufacturing
- Logistics
- Procurement/Supply
- Finance/Accounting/Planning
- People Management (e.g. the HR Manager)

It will also need a leader and a set of governance rules (e.g. which decisions it is authorised to make and what happens about decisions outside of this scope). Everything needs to be put in place to enable immediate actions in response to the crisis so the more that can be delegated to this team the better. Normally in such a serious situation the PMT will already include the most senior executives in the organisation.

The PMT is probably the best body to quickly decide a set of crisis targets to replace the business as usual ones. Typical new targets may include:

1. Avoid putting employees and other stakeholders at unnecessary risk to their health and safety
2. Prioritise operations to maintain those which are essential to maintaining a safe working environment and keeping critical business processes running
3. Ensure resources and utilities essential to health and key operational activities continue to be available

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4. Ensure internal and external communications occur with all important stakeholders, and are timely, factually correct and appropriate
5. Ensure contingencies are available when needed to mitigate availability problems with essential employees, key capabilities, materials, utilities and health supplies and equipment.
6. Where operations have to be shut down this should be done in a safe manner which allows them to be smoothly and safely brought back on-line following the crisis
7. Establish and keep up to date a contact list of all people in the organisation (including mobile phone numbers and private e-mail addresses) and a process for quickly dissemination important information to them, including back-up plans.

This list of Crisis Response Targets is not exhaustive but should help the CMT to develop a list which is appropriate to your own organisation and the exact nature of the crisis.

## **Resources**

The most important resources in your organization, especially in a pandemic situation, are your employees. As already mentioned in the report from the European Centre for Disease Control during a pandemic you could suddenly be faced with 20% of the workforce not turning up for work. In addition those who do turn up will have serious concerns which distract them from their normal duties.

You will need to have a plan in place to deal with this. For example do you have an up-to date list of all employees trained to perform duties which are not their normal jobs (perhaps they have done other jobs in the past or received appropriate training or experience)?

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Do you have up-to date emergency contact information for all employees? In an emergency situation will you or the company doctor be able to get access to critical medical information about employees (e.g. Antibiotic or other medication allergies, blood groups, serious medical conditions or medication requirements)?

As already mentioned in the report from the ECDC important supply lines for your operations, utilities, services and medical infrastructure could quickly dry up or be disrupted. Therefore the Pandemic Response Plan needs to identify critical areas in advance of the crisis occurring and have contingency plans ready. These could include temporarily increasing stock levels of raw materials or key spare parts, having back-up electricity generators with adequate fuel, developing alternative supply sources and service providers ready for emergency situations and building up your business supplies of important medical supplies and equipment.

In addition are there any other utilities or infrastructure items which are critical to your business (e.g. water, gases, energy, chemicals, IT systems, internet connections, telecommunications). The availability of these items could become sporadic or unreliable therefore you need to consider what alternatives are possible or prepare for outage periods (e.g. safely and securely running down and restarting sensitive or dangerous operations). Is there adequate redundancy built into your systems or is it possible to secure back-up equipment, processes or software at short notice. How frequently are you backing up all relevant data and how easily available are these back-up copies.

## **Activities**

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As already mentioned in the report from the ECDC if your business uses Just-in-time (JIT) manufacturing processes you could find that employee health problems at your suppliers disrupts your supply chain. Therefore as a pandemic type situation appears you should quickly identify any critical items and ramp up contingency supplies if this is practically possible.

Similarly your organization may be part of the just in time supply chain for other organizations. In addition to trying to ensure you produce enough products or services to keep those organizations operating how confident are you about the robustness of the logistic arrangements. If you are using third party logistics suppliers what contingencies do they have in place. Do you have alternative logistics providers who can be used if the main provider is unable to deliver? Do you need to temporarily increase the stocks of your own end products to ensure your customers have continuous supplies?

## **Interactions**

Go through your list of stakeholders (a typical check list is available from risktuition.com) and identify any interactions which could be at risk in a pandemic situation. For example any interactions requiring person-to-person contact (sales, supplies, deliveries) may need to be considered. Is it possible to operate these interactions for a period time on a non-physical contact basis (e.g. by telephone or internet).

Do any of your interactions with the outside world involve services provided by people, e.g. postal delivery of order confirmations, invoices, products or postal receipt of orders, payments? Determine what could be done if these services become unreliable. Can the transactions move to virtual systems (e.g. e-mail) or alternative courier

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services and if so do you have the appropriate information to hand to quickly activate these (e-mail addresses, courier contact details and terms and conditions).

## **How to construct a pandemic response plan.**

In the previous sections we have explained why it is important to prepare your business for a pandemic or serious epidemic situation. Ideally you should prepare a value TRAI which defines your organisation under normal trading circumstances. Then use the items identified in the value TRAI as prompts in a pandemic response risk identification workshop. Group the risks you identify under the headings: Targets, Resources, Activities and Interactions. If you need more information about this approach visit either the [bizchangers.com](http://bizchangers.com) or [risktuition.com](http://risktuition.com) websites for free guidance.

Your risk identification workshop should include key managers from the business and any relevant specialists (e.g. the works doctor or nurse, the Health and Safety manager). Earlier in this article we have made a number of suggestions of possible pandemic related risks which may help to stimulate some ideas.

After identifying all the risks relevant to your business determine what is the best way to manage them. In some cases you will be able to control the cause of the risk (e.g. the risk of employee panic due to lack of reliable information – could be addressed by implementing regular system of information dissemination to all employees; or the risk of a lack of local medical supplies – could be addressed by ensuring the company has, at all times, appropriate pandemic response supplies as recommended by the company doctor).

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In other cases you will not be able to control the cause of a risk but you will be able to mitigate its impact on the business (e.g. you can not do anything about infected people not turning up for work but you could have an emergency roster to ensure that critical jobs continue to be operated).

For more information about the causes and consequences of risks and what to do about them either visit the [bizchangers.com](http://bizchangers.com) website or consult Chris Duggleby's book: Value TRAI Based Risk Management.

It is these risk control or mitigation actions which will form the basis of your Pandemic Response Plan. To be consistent with the risk identification process it is a good idea to structure the plan under the following headings:

- Pandemic Targets and Management Processes
- Pandemic Resources
- Pandemic Activities
- Pandemic Interactions with Stakeholders

This will make the plan easier to update in the future whenever you rerun the risk identification workshop. The following is a summary set of guidelines of what you should consider under each of these headings.

## **Pandemic Targets and Management Processes**

Some of your normal business targets and management processes may become redundant in a pandemic crisis. Using the suggestions earlier in this article as prompts develop a set of generic targets which can be adopted at short notice during a serious epidemic. Also introduce a crisis management process like a Pandemic Management Team (PMT)

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in order to identify more specific or tactical targets as the crisis unfolds and more information becomes available.

## **Pandemic Resource Planning**

The Pandemic Resource Plan should have two focuses:

- ensuring the resources are available to keep critical business activities operating and
- identifying and securing resources specific to the crisis (e.g. medication, information, specialist help).

Draw up a list of the resources needed under a) and b) and identify how these will be dealt with in a crisis scenario. In particular identify different priority rankings for the resources in your list e.g.

1. life preserving/health related
2. essential to critical business processes
3. required for important business processes
4. nice to have's if a), b), and c) are already satisfied
5. the rest.

Where possible draw up lists of alternative resources e.g. if electricity supplies fail is a back-up generator available; if the post fails can e-mails be substituted. Think of resources in the broadest sense: physical, human, information, technology, equipment, services etc.

## **Pandemic Activity Planning**

Again this plan should be divided into two parts a) planning for ongoing business activities and b) pandemic response specific activities. Which of the ongoing activities are critical and must be kept going at all costs? Which ongoing activities could be sacrificed to allow others to

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continue? Are any of the activities you perform important to society's general response to the crisis (e.g. do you provide: transport services, information dissemination services, critical supplies or utilities to health care providers). Your PMT should be overseeing and managing all crisis management activities to ensure coordination and good communication between all areas involved in the response.

## **Pandemic Interactions with Stakeholders**

Your should already have a list of all the normal stakeholders for your business (and if you do not this is a good time to prepare one). For pandemic preparation you will need to review this list to ensure it is sufficiently comprehensive (for example have you included all providers of medical supplies, services and information, with upto date contact details? If your local hospital or Doctor is unavailable what are your back-up plans?). When you draw up the pandemic stakeholder list ensure it can easily be used as a working document: are the headings logical and if it is long is there an index? Is it upto date? Can the stakeholder list be accessed if power fails or the computer systems are down (is there a hard copy)?

**Hopefully this will be enough to help you get started with preparing or updating your pandemic response plan. If you can think of any improvements or have any recommendations please let us know via the [bizchangers.com](http://bizchangers.com) website. That site also has more information on the risk identification and management processes mentioned here as does the book Value TRAI Based Risk Management by Chris Duggleby (Publisher Bizchangers Media).**

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