GS1 Denmark

AVOID PROBLEMS FOR PHARMACY ROBOTS
Guide for using barcodes on pharmaceutical products

Introduction

Around one-third of Danish pharmacies currently use a pharmacy robot to handle pharmaceutical products, and the number is increasing. The pharmacies tend to opt for fully-automated pharmacy robotics solutions where the robot both stores and picks the products. When the pharmacy receives a pharmaceutical product, the robot scans the barcode on the product and subsequently measures the product dimensions in order to place the product on a correspondingly dimensioned storeroom shelf. When an item is ordered from the counter, the robot locates the pharmaceutical product and sends it to the counter.

Challenge

It is essential that pharmacy robots can read the barcode and measure the product dimensions. It is also important that the product packaging allows it to be sent to the pharmacy counter without damaging or opening the packaging, and without the medicine being dropped by the robot because the packaging is difficult to handle. Consequently the package must be handled manually by a pharmacist. If such problems did not occur, each pharmacy robot would be able to handle 40% more packages. GS1 Denmark and Glostrup Apotek (a local retail pharmacy) have analysed the most common problems for pharmacy robots, and created a guideline for what to avoid – see below.

Benefits

Pharmacy robots enable many benefits:

- Optimise the pharmacy's product flow
- Frees up many resources for pharmacies in their daily operations
- Reduces storage errors

BARCODE CHECKLIST FOR PHARMACY ROBOTS

PRINTER

1. If a printhead is used to apply barcodes, the printhead must be cleaned and inspected on a regular basis. A dirty or damaged printhead may result in white vertical or horizontal lines in the barcode, rendering it unreadable.
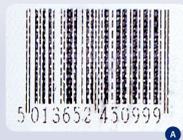
Picture A
*A dirty or damaged printhead makes the barcode unreadable.*

BARCODE TYPE, COLOUR, BACKGROUND AND SIZE

2. Use black lines on a white background. If this is not possible, use dark lines on a light background. It is important to check whether there is sufficient contrast between the dark lines on the white background to ensure a good barcode quality and readability.

Picture B
Do not use red as the colour of the bars, as this will make it difficult for the red scanner beam to read the barcode.

Picture C
Do not use a transparent background. Light lines on a dark background are not permitted.
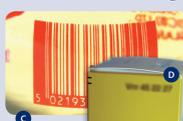
Picture D
The background is too dark to ensure good barcode readability.

3. Comply with the recommended barcode and quiet zone dimensions (the quiet zone is the white margin to the right and left of the barcode). Otherwise, the scanner will not be able to read the barcode. Quiet zone dimensions depend on the size of the barcode. See quiet zone dimensions at www.gs1.dk

Picture E and F
The quiet zone is insufficient to the left and right, respectively.

4. Do not use a background which can generate reflections, as this may significantly impair the barcode scanning.

Picture G and H
The glossy packaging impairs the scanning.

5. Use the correct barcode type.

Picture I
The barcode on retail packaging of pharmaceutical products should be of the EAN13 barcode type and not Code 39 as shown in the picture.

PACKAGING FORM

6. If the pharmaceutical product packaging is curved or cylindrical with a diameter of less than 6 cm, the barcode should be placed as a "ladder", i.e. the lines must be horizontal, as a scanner cannot read a curved barcode.

Picture J
The barcode is placed in the wrong direction, and the scanner might have problems reading it.

7. Do not use triangular packaging, as this can make it difficult for robots to grip the packaging. The optimal packaging types for robot handling are square and cylindrical packages with well-defined dimensions.

8. Do not use transparent outer packaging, as this could make it difficult for a robot to measure the dimensions.

Picture K and L
The robot's measuring light will not be able to measure the dimensions due to open or transparent surfaces.

9. Use a packaging type with clear, definable dimensions that allow the robot to measure the product.

Picture M and N
It is difficult for a robot to measure the dimensions of these types of packaging as it will measure height and width at a random place.

The robot may, for instance, only measure from bottom to "shoulder". Similarly, an uneven surface, e.g. caused by an affixed patient information leaflet, will make it impossible for the robot to measure the packaging dimensions.

10. Select a packaging type that does not break and does not open during the handling process.

Picture O
The packaging is inappropriate.

There is a risk that the packaging will open and the medicine fall out or that the boxes fall apart before they reach the counter.

The cardboard box should be of the right quality so that it does not bend easily and thus open.

The size of the cardboard box should be such that the packaging volume fits the dimensions of the cardboard box, so that for instance blister packs inside the box cannot move around.

There is a great risk that jointly packaged products break up during handling if not sealed with tape. Jointly packaged products should therefore be sealed with tape or completely shrink wrapped.

LABELLING MATERIAL

11. Do not use labelling material through which the underlying text is visible, e.g. in connection with packaging with foldable patient information leaflets.

Picture P
The text behind the barcode is visible through the barcode. This impairs the scannability.

12. Use labelling materials and glue that is appropriate for the environment (temperature fluctuations and sunlight) and for the wear that the product will be exposed to in the supply chain to prevent the barcode from falling off or becoming unreadable.

Picture Q
The barcodes are worn.

BARCODE LOCATION

13. It is recommended that only one barcode is visible on the packaging, if possible.

Picture R
Two visible barcodes. It is impossible for robot and staff to know which barcode to scan.

14. Place the barcode on an even surface.

15. Do not place the barcode under shrink foil, welding seams, on perforations, etc.

16. Do not place the barcode close to or around corners.

This guideline shows what manufacturers of pharmaceuticals should avoid when packaging pharmaceutical products which may be handled by pharmacy robots, to make sure the packages can be handled effectively by pharmacy robots. **The guideline can be downloaded at: http://dox.gs1.eu/**